APRIL 1952

PIT AND QUARRY

In this Issue . . .

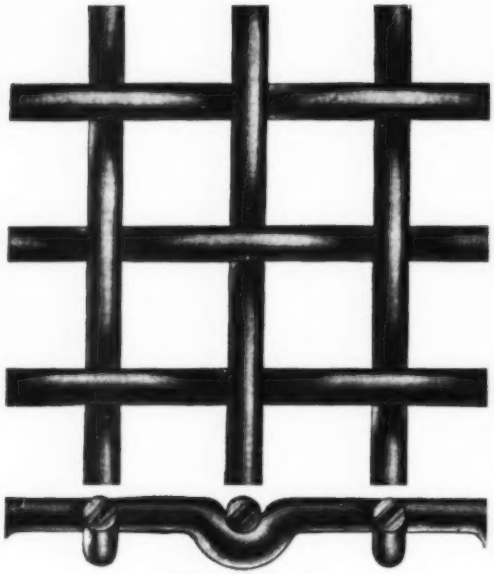
Convention Reports of Natl. Crushed Stone Assn., Natl. Concrete Masonry Assn., Amer. Concrete Pipe Assn., A.C.I., A.I.M.E., and Natl. Concrete Products Assn. (Canada) • Factors in Flotation

New Plant of Cementos El Salvador

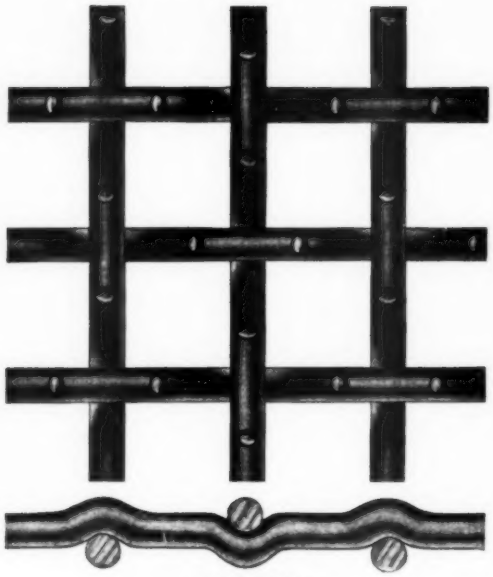
Fundamentals of Gypsum Calcination

Table of Contents, Page 68

Crushed Stone Plants of B. L. Anderson, Garrison, Iowa.



STA-SMOOTH



ARCH-CRIMP

SUPER-LOY VIBRATING-SCREEN SECTIONS

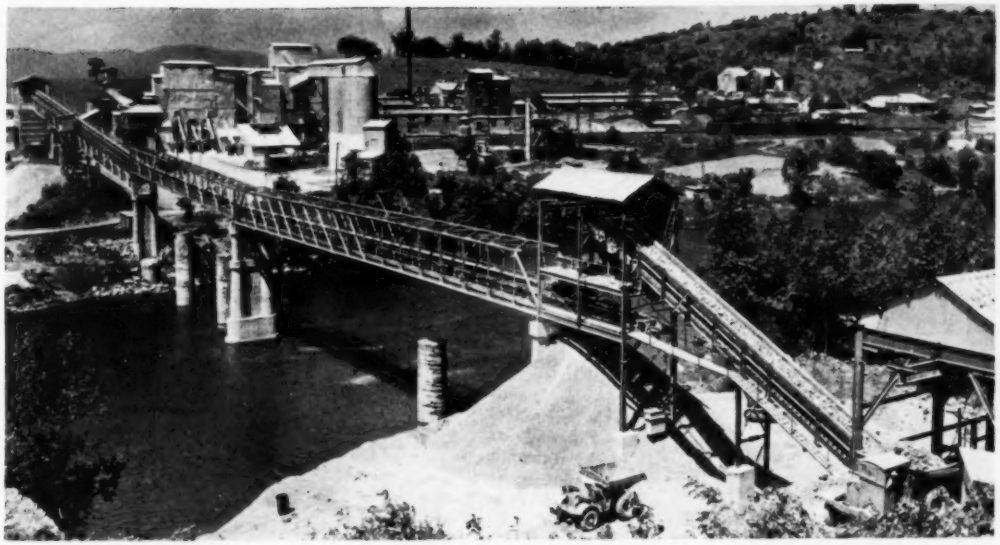
SUPER-HARD - - - SUPER-TOUGH - - - SUPER-STRONG

SUPER-LOY SCREENS are made from a high carbon steel specially alloyed to withstand abrasion longer — endure vibration better — resist fatigue to the utmost

ORDER LUDLOW-SAYLOR HOOK-STRIPS FOR ALL TENSIONED VIBRATING-SCREEN SECTIONS.

THE LUDLOW-SAYLOR WIRE COMPANY

634 S. Newstead Ave. **ST. LOUIS 10, MO.**



Limestone is carried across a river at a rate of 175 tons per hour on a Link-Belt 30-in. wide belt conveyor, fed by Link-Belt manganese apron feeder and steel apron conveyor on 30° incline, discharging to Link-Belt vibrating screen.

Why LINK-BELT belt conveyors are first choice in so many industries . . .

Engineering experience plus quality components combine to cut handling costs

EFFICIENCY in moving materials makes the difference between profit and loss in many operations. That's why it's so important to make sure you get the *right* belt conveyor system for your needs.

And there's no surer way of meeting your specific operating requirements than by calling in Link-Belt. Our belt conveyor specialists can efficiently engineer the system and recommend the correct components from Link-Belt's complete line of idlers, trippers and terminal machinery. And Link-Belt can match your needs in associated equipment—other types of conveyors, feeders, elevators, car dumpers and shakers.

Equally important, with such a tremendous background in belt conveyor application, Link-Belt is in an ideal position to follow through on every detail of your job—from planning through erection, if desired. One source—one responsibility.

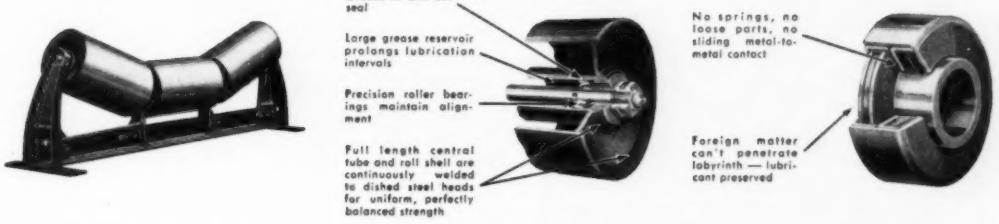
Link-Belt will gladly work with your engineers or consultants. There's a Link-Belt office in the principal city near you.

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, Duluth 2, San Francisco 24, Los Angeles 33 Seattle 4, Toronto 8, Springs (South Africa), Sydney (Australia). Offices in Principal Cities. 12,720-C

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT Roller Bearing Idlers provide free-rolling, long life


Grease-in-Dirt-out seal
Large grease reservoir prolongs lubrication intervals
Precision roller bearings maintain alignment
Full length central tube and roll shell are continuously welded to dished steel heads for uniform, perfectly balanced strength
No springs, no loose parts, no sliding metal-to-metal contact
Foreign matter can't penetrate labyrinth — lubricant preserved

Standard for Industry—L-B "100" Idler **Less lubrication and adjustment** **Grease-in-Dirt-out Seal**

PIT AND QUARRY, April, 1952, Vol. 44, No. 10. Published monthly by the Complete Service Publishing Company, 431 S. Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

TODAY'S NEWS IN PORTABLES

THE GARDNER-DENVER 600!

IT'S A 600 FROM THE GROUND UP

Here's a brand-new machine that gives you famous Gardner-Denver dependability in a 600 cubic foot portable. Compressor, engine and undercarriage are all specially designed for high capacity performance.

And a FULL 600

Delivers a full 600 cubic feet of air per minute, actual capacity, at 100 pounds pressure. The compressor is an 8 x 6½ x 6, operating at only 1200 r.p.m.

SMOOTH RUNNING

Moderate operating speed and balanced construction minimize vibration.

FULLY WATER-COOLED

Fully water-cooled compressor cylinders assure low discharge temperatures on the hottest day of the year—properly lubricated cold weather starts. Two-stage design insures higher output for all work.

Engineered for Economy

Extra-large valve areas and air passages — properly engineered ratio of low pressure to high-pressure cylinders — are some of the features that raise compressor efficiency—lower operating costs.

RUGGED, STRONG UNDERCARRIAGE

Travels access roads safely—enables you to spot the Gardner-Denver 600 anywhere. Deep oil sumps on both compressor and engine permit off-level operation when necessary.

MORE VALUE FOR YOUR MONEY

Everybody wants a look-see when Gardner-Denver introduces a new portable compressor. They know from experience that a Gardner-Denver completes the job—furnishes low-cost compressed air every single day. That's because only Gardner-Denver makes a two-stage, fully water-cooled portable for all weather, and for any altitude. So take a look at the Gardner-Denver 600 today. See for yourself how this sturdy, high capacity portable can speed your big tunnel and construction jobs. It'll give you new ideas on low bidding. Or write us for the specifications.

SINCE 1859

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

26 Times the service

powering blast hole drill rig

Best service ever recorded by ordinary transmission belts, even with continuous attention and maintenance, was 4 to 6 weeks, due to severe pulsating overloads, dust and shocks.

The G. T. M. — Goodyear Technical Man — recommended using COMPASS CORD belt, with single plane of cords in load-carrying section of the belt. First belt has been on drive more than 3 years—without any attention at all. ***After 26 times the service of previous belts, this* COMPASS *belt looks good as new.***

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING, RUBBER-COVERED ROLLS *built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor. Look for him in the yellow pages of your Telephone Directory.*

GOODYEAR

THE GREATEST NAME IN RUBBER

We think you'll like "THE GREATEST STORY EVER TOLD"— Every Sunday — ABC Network

Compass—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

in shuttle car cable
there are no "**lucky**" breaks
-they <u>all</u> cost money!

. . . and four or five breaks can equal the cost of the cable in lost production. Since actual records show different makes have widely varying life expectancy, it pays to choose your cable carefully.

for longer "break-free" service insist on

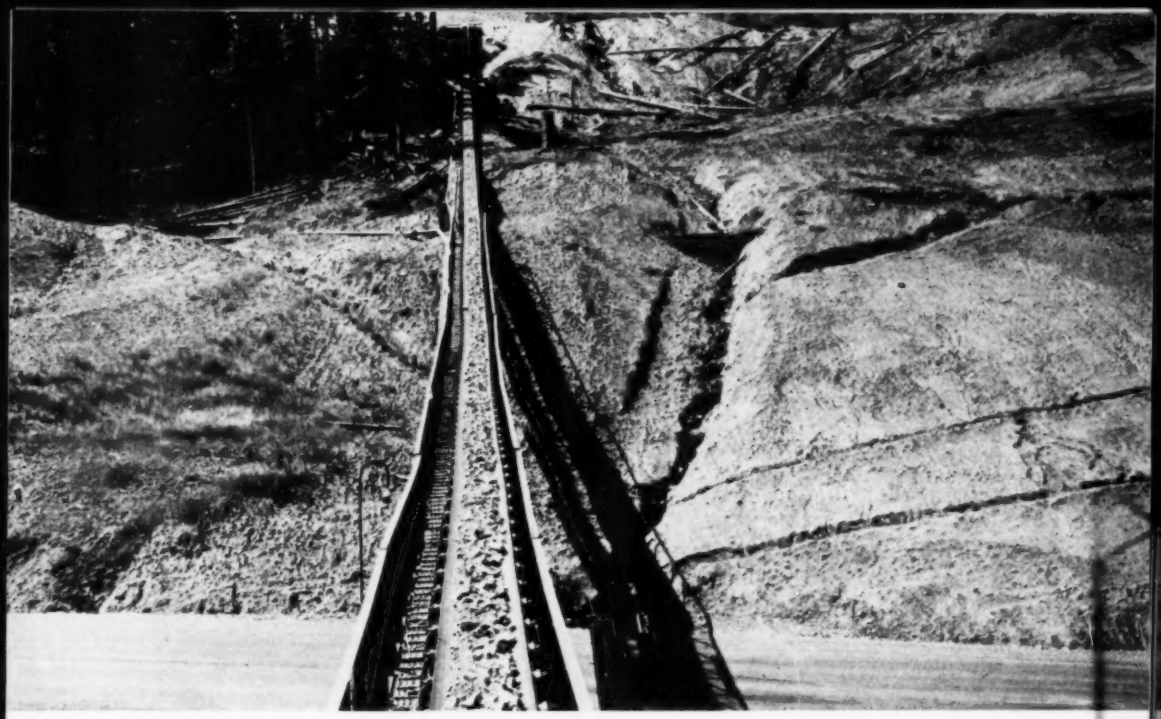
Cold Rubber Insulated Securityflex

This ANACONDA portable power cable—the first with cold rubber insulation—won't override, kink or twist. New or aged, it has greater resistance to cutting, crushing, impact, abrasion, heat and moisture penetration than other types. It stands up well under reel tension, passes easily over guides, and won't fatigue readily from frequent sharp bends. Patented "anti-short" breaker strip and flat-stranded grounding wire make it the safest known cable for the job.

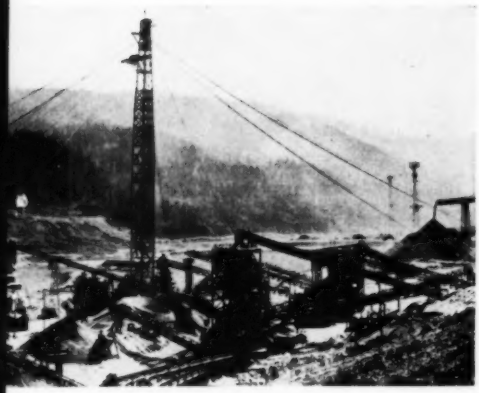
When cable repairs skyrocket costs so fast, it's poor economy to buy less than the best. A sample length of Securityflex* Shuttle Car Cable will convince you that this super-safe, super-tough cable can speed your production and cut down those "bad" breaks that leave your men and machinery idle too long. Call your nearest Anaconda Sales Office or Distributor. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

52358 *Trademark

the right cable for the job ANACONDA® **wire and cable**



At Lookout Point Dam **Belts reinforced with "Cordura" rayon do double duty on huge Federal project**



General view of the construction work on Lookout Point Dam. "Cordura" rayon-reinforced conveyor belts under more than 19,000-pound tension carry rock from quarry to stone piles at the dam at the rate of 400 tons per hour.

Pictured above is one of the conveyor belts reinforced with Du Pont Cordura* High Tenacity Rayon, which does a two-way job of both quarrying and dam building on the vast flood-control project in the Willamette Basin in Oregon. The 36" belt, 1570 feet long, was manufactured by Manhattan Rubber Division of Raybestos-Manhattan, Inc.

The engineers like belting reinforced with "Cordura" because of its great strength, minimum stretch, high resistance to the shock of heavy rock loads, and its easy troughing.

Why do belts reinforced with "Cordura" have these advantages? Because "Cordura" rayon yarn is inherently stronger than natural fiber yarn. And it permits a thinner...yet stronger...belt. *Greater strength with less bulk*. These thinner belts are naturally more flexible, sit firmly on the center idler, and thus train better whether loaded or empty.

Find out about conveyor belts made with "Cordura" rayon. We'll be glad to send you the names of suppliers...also give you full information about "Cordura" in the booklet "Sinews for Industry." For your free copy, write: Textile Fibers Dept., Room 4421, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

*REG. U. S. PAT. OFF.

Du Pont "Cordura" High Tenacity Rayon

STRENGTH AT LOW COST

DU PONT

150th Anniversary

Better Things for Better Living
. . . through Chemistry

WIRE ROPE

This is the most economical rope we've ever made for quarries

ROEBLING is the best known name in wire rope. That's partly because we were the first wire rope maker in America. But more than that, we've always led in developing better wire and better rope for every purpose.

Today's Roebling Preformed "Blue Center" Steel Wire Rope is the quarryman's best choice for efficiency and long life. This rope has *extra* resistance to crushing and abrasion . . . stands up under rough going. It saves you time and cuts costs.

There's a Roebling wire rope of the right specification for top service on any job. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 701 ST. CLAIR AVE., N. E. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

She's looking through someone else's eyes

Few purchases are made without thought of how they will be judged by others.

Men who order more than 85 per cent of all Multiwall bags are well aware of this. They rate* a good impression high on their purchasing check list. This, of course, includes a good printing impression.

When your Multiwall bag puts its best foot forward visually, you take a long step toward both winning and holding your customer.

The *use* of what you sell, and the *re-orders* you receive, *inevitably* are influenced by your bag — how it looks, how easy it is to read, how easy it is to remember.

Most often, the best-dressed Multiwalls are Union Multiwalls. This is one of many good reasons why the biggest users of Multiwalls today look to Union for a greater proportion of their needs than at any other time.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

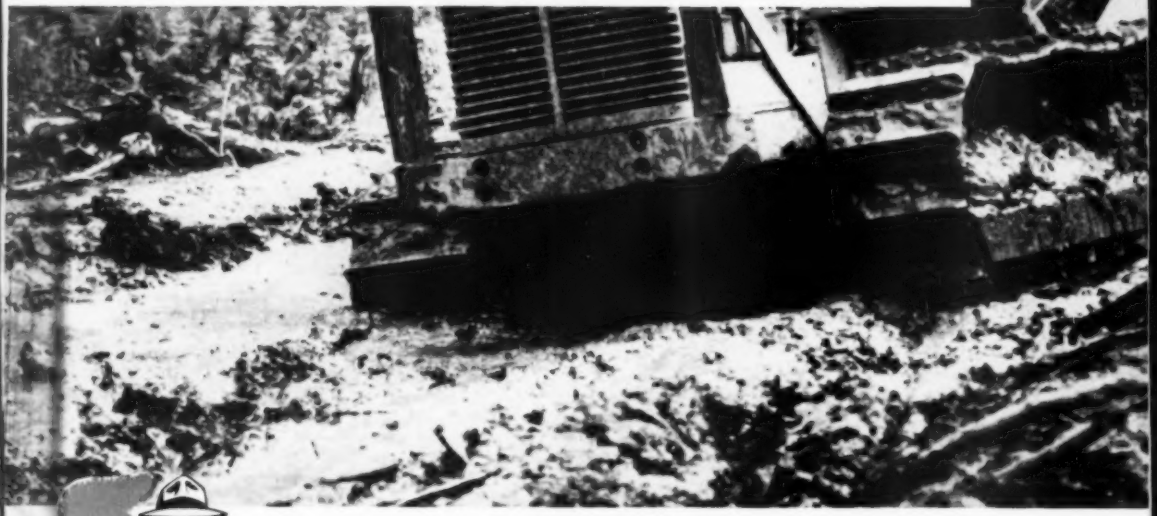
*August, 1951 research study.

UNION BAG & PAPER CORPORATION • NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING

only Allis-Chalmers can offer you

1000 Hour Lubrication

for truck wheels, idlers, support rollers



FULL PROTECTION—only One Greasing Every 1000 Hours—with Allis-Chalmers *Exclusive* Positive Seal, Roller Bearing Design

Think of it! You can operate for 6 months on a 40-hour-week basis with just one lubrication of 14 to 20 of the most-abused, hardest-to-service points on a tractor. It's possible through an exclusive combination of glass-smooth Positive Seals and anti-friction bearings that help you do more work at lower cost even under toughest conditions! And it's another ahead-of-the-field design feature found only in the four new Allis-Chalmers tractors.

These Big Benefits Mean DOLLARS to you!

DAILY GREASING PERIODS ELIMINATED. You save at least 30 minutes every day . . . gain about one full month's production every year.

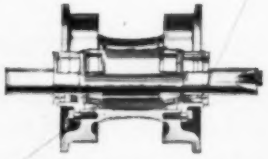
FULL PROTECTION ASSURED. Positive Seals keep grease in . . . dirt and moisture out. 1000-Hour Lubrication gives you protection unchallenged in the tractor field.

SAVES ON GREASE. Truck wheels, idlers and support rollers are grease-filled at the factory . . . need new grease only once every 1000 hours!

EASY TO SERVICE. No more cleaning of dirt, muck and grime from fittings every day. Operator can choose time and place to regrease when conditions are favorable.

Here's the secret:

Positive Seals ground smooth as glass, seal the grease in . . . keep dirt, grit, dust, mud and water *out*.



Tapered Roller Bearings protect the Positive Seals by letting truck wheels, idlers and support rollers rotate freely . . . without side thrust or wobble.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

the newest, finest tractor line on Earth!

HD-20 • HD-15 • HD-9 • HD-5

DESIGNED FOR YOUR JOB • BUILT TO TAKE IT • EASY TO OPERATE • EASY TO SERVICE

...for an impartial decision

What type bearing is best suited to your needs... Straight Roller... Tapered Roller... Spherical Roller... or some other type?

You can be sure of an impartial decision from Torrington which makes *every* type of anti-friction bearing. In addition, Torrington engineers have had broad experience in applying anti-friction bearings to virtually every type of equipment —from household appliances to steel mill machinery.

This experience and an understanding of customers' problems have proved beneficial to many manufacturers. Why not ask a Torrington engineer to help with *your* next problem?

THE TORRINGTON COMPANY

South Bend 21, Ind. Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

Spherical Roller • Tapered Roller • Straight Roller • Needle • Ball • Needle Rollers

TELSMITH EQUIPMENT FOR DAMS

TVA's Watauga Dam, Tenn. Four different types of Telsmith Crushers used on this job.

● Huge dam projects and Telsmith Aggregate Plants go together. Many dam builders call in Telsmith engineers right at the start—for consultation as to the proper plant layout and the right equipment to use. Then Telsmith makes the detailed drawings for the erection of the plant and furnishes most of the machinery. Telsmith designed plants have proven their efficiency on many large projects and Telsmith equipment has a world-wide reputation for the production of low-cost aggregate. The ruggedness of Telsmith equipment is strikingly demonstrated by long life in severest service, on successive projects. After producing 1,500,000 tons of aggregate at Center Hill Dam, the same Telsmith equipment is now turning out about the same amount of aggregate at Buggs Island Dam.

Center Hill Dam, Tenn. Telsmith designed complete crushing-screening plant; and furnished most of the equipment.

Buggs Island Dam, Va. This Telsmith crushing plant also produced the aggregate for Center Hill Dam.

Save **TIME and MONEY** **Consult Telsmith Engineers—Ask for Bulletins 266 and 271**

Norfork Dam, Ark. This 500 ton per hr. capacity combination quarry and sand and gravel plant was Telsmith designed and equipped.

MILWAUKEE TELSMITH WIS. U. S. A.

Philpott Dam, Va. Here, too, the crushing-screening equipment is Telsmith.

Mount Morris, Dam, N. Y. The 300-350 tons per hour rock crushing plant is Telsmith designed and equipped.

OTHER DAMS BUILT WITH TELSMITH EQUIPMENT

- Alatoona Dam, Georgia
- Ariel Dam, Ariel, Wash.
- Boysen Dam, Shoshoni, Wyo.
- Carpenter Dam, Arkansas
- Cascade Dam, Washington
- Clark Hill Dam, Augusta, Ga.
- Conowingo Dam, Conowingo, Md.
- Dale Hollow Dam, Tennessee
- Davis Dam, Nevada
- El Presidente Dam, Mexico
- Fort Gibson Dam, Oklahoma
- Grand Coulee Dam, Washington
- Kortes Dam, Wyoming
- Mercury Dam, Montana
- South Holston Dam, Tennessee

MS-11

SMITH ENGINEERING WORKS

504 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. — 311 W. Wacker Drive Chicago 6, Ill. — 713 Commercial Trust Bldg. Philadelphia 2, Pa. — 238 Main Street Cambridge 42, Mass. — Beebek Eqpt. Co. Milwaukee 3, Wis. — A. N. Wigle, 294-6 N. Roosevelt Ct. Columbus 9, Ohio

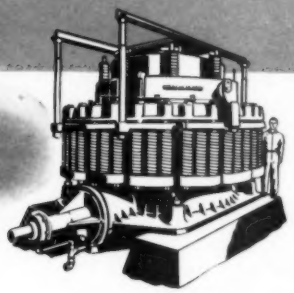
Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash. • Mines Eng. & Eqpt. Co., San Francisco 4, Calif. • Interstate Equipment Co., Statesville, N. C.

Rish Eqpt. Co., Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8, & Nashville 6, Tenn.

from the PYRAMID OF KHUFU . . .

to the MESABI RANGE . . .

IRON HAS COME A LONG WAY



THE largest of the *Pyramids of Gizeh* is that of *Khufu*, built of limestone cut in the quarries of the Nile Cliffs and floated across the river to the site of the tomb.

It is claimed by some historians that the oldest iron to be discovered was in the form of a tool found in an air shaft of this great pyramid of Khufu, which was built about 2800 B.C. From Khufu to the modern marvel of the Mesabi Range, iron has come a long way . . . to become the metal of greatest service to man.

Since their introduction, "*SYMONS*" Cone Crushers, with their great capacity for more finely crushed ore at lower cost, have been a big factor in the production of iron ore . . . *and have achieved outstanding performance records in all of the great ore and industrial mineral operations the world over.*

NORDBERG MFG. CO., Milwaukee, Wisconsin

• "SYMONS" Cone Crushers . . . *the machines that revolutionized crushing practice* . . . are built in Standard, Short Head, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to 900 tons per hour.

"SYMONS" . . . A NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD

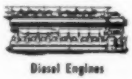
C352

"SYMONS" Primary Crushers

Grinding Mills

Mine Hoists

"SYMONS" Vibrating Bar Grizzlies and Screens



Diesel Engines

NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • SPOKANE • WASHINGTON • TORONTO
MEXICO, D. F. • LONDON • PARIS • JOHANNESBURG

Practical Assistance

Whether it's getting out of a fishing tackle tangle, or unsnarling a lubrication snag in your quarry operation . . . practical assistance, the kind that gets you off the hook fast, is the thing you look for most.

And ***PRACTICAL TECHNICAL ASSISTANCE*** is a Cities Service specialty.

Cities Service Lubrication Engineers can offer every quarry operation practical assistance that will mean dollars, man-hours and equipment saved. They're specialists in the industry's most effective lubricating practices. What's more, they offer the most complete line of quality lubricants.

but check for yourself.

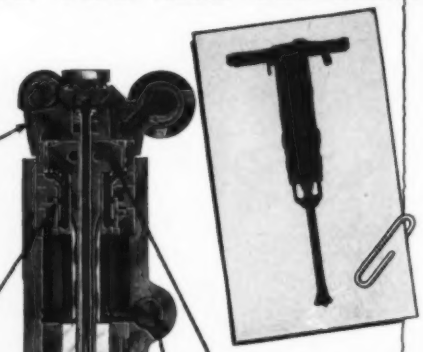
✔ Check on the high quality of all Cities Service lubricants. Ask critical users. Or better still, test them on the job.

✔ Check the complete Cities Service line for the correct lubricant for every need. Deliveries are quick, and dependable.

✔ And finally, discuss your problems with a Cities Service Lubrication Engineer . . . he's probably solved many like them for other quarry operations. Write, or phone CITIES SERVICE OIL COMPANY, Dep't. D 21, Sixty Wall Tower, New York City 5 . . . or get in touch with the office nearest you.

CITIES SERVICE

HERE'S WHAT WE PUT *INTO* A ROCK DRILL ...SO YOU CAN GET MORE *OUT* OF IT!



Combination Backhead for blast rod, air tube or water tube operation greatly reduces cost of change-over parts. Air-operated automatic water valve is optional on some backhead.

Jet Valve is instantaneous, positive-acting, end-seating. Thrown by a jet of air, it provides precise timing. Increased piston hammer velocity results in high drilling speed, low air consumption, strong rotation and easy holding.

Integral Cylinder. All hammer bores are ground in line at one operation, allowing piston hammer to run in true alignment. Replaceable bronze cylinder bushing maintains the front cushion.

Resilient Retainer. Yoke-type, held in replaceable hardened steel bushings and spring-cushioned to dampen vibrations when pulling drill rods. Easily opened and closed, can't wear the chuck housing, and has positive lock-on nuts.

Four-Pawl Rotation. Four reversible pawls give maximum service at four rotation speeds — extra fast, fast, slow, extra slow.

Independent Blow Control changes from drill to blow with ease. Full line pressure available for emergency blowing. Large diameter air tube assures strong, constant blow. Side outlet exhaust is possible with optional blow valve.

Three-Piece Chuck. Chuck, sleeve and nut. Replaceable bronze chuck nut held in a steel sleeve checks piston flute wear.

Worthington BLUE BRUTES

Have Everything You Need For Hard, Fast, Money-Saving Drilling

With every detail designed to make air do more work, Blue Brute Rock Drills combine the ruggedest construction with the easy handling that goes over big with operators. The WS-55, illustrated, is right for average jobs. For lighter work, use the WS-45 — for heavy duty, the WS-30.

3 More Reasons Why There's More Worth In A Blue Brute!

WB-34 Paving Breaker
Hardest-hitting, easiest handling breaker in the 35-lb. class. Ideal where the operator has to lift the tool frequently in guiding its work.

W-14 Clay Digger
Developed in the field by men with practical experience in clay, and thoroughly proved by long, rigorous job-testing.

W-8 Backfill Tamper
Medium weight, with simple horseshoe valve and ample oil reservoir. A good "walker" that does a finished backfill job, ready for immediate paving.

Worthington Pump and Machinery Corp.
Construction Equipment Sales Division
Dunellen, New Jersey

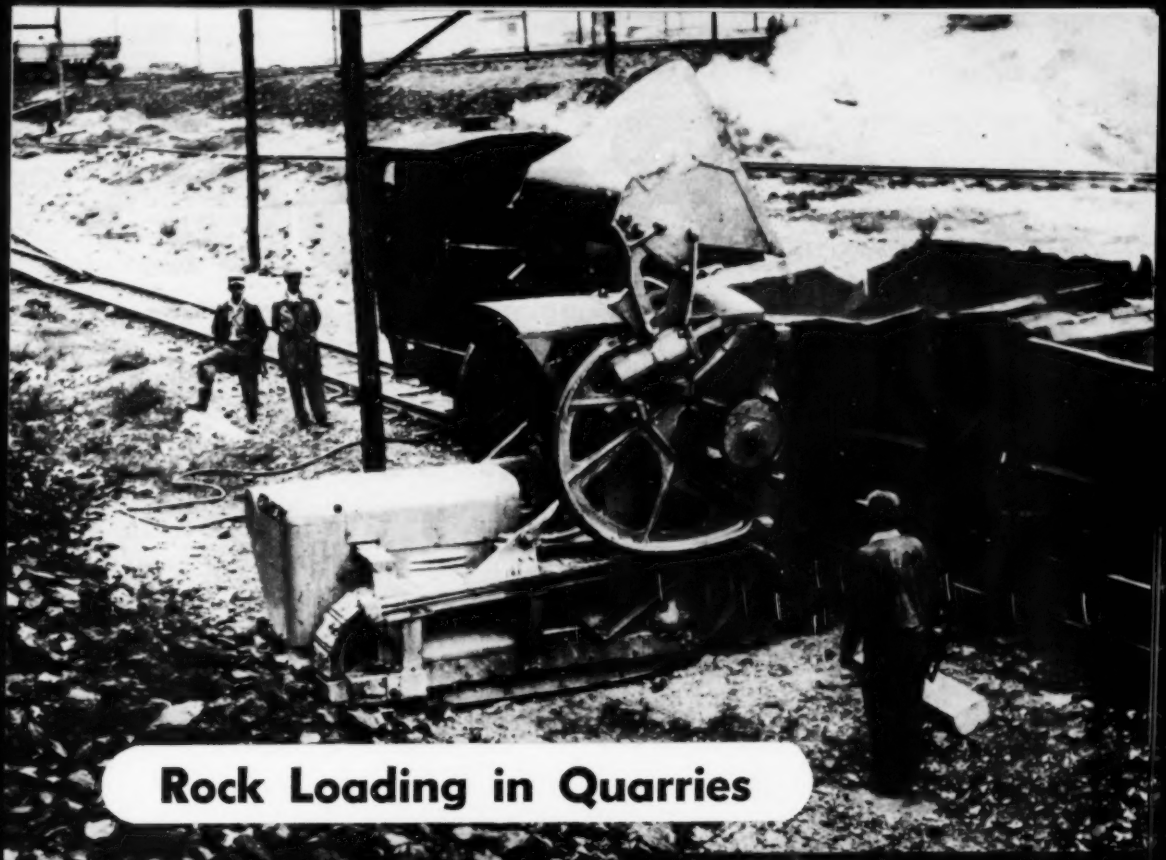
Distributors In All Principal Cities

WORTHINGTON

Immediate deliveries from your nearby Worthington Distributor
See him, or write us direct

BUY WORTHINGTON BLUE BRUTES

H1-1

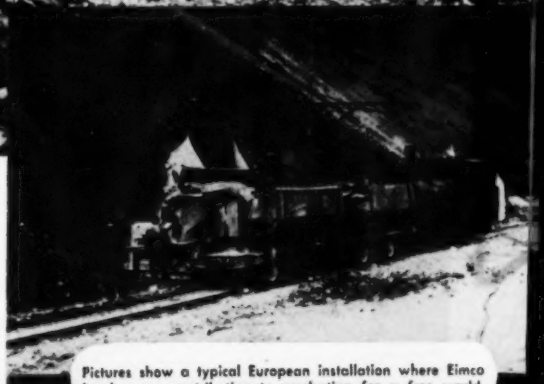


Rock Loading in Quarries

The versatile Eimco 104 loader will dig and load rock more economically than any other equipment.

It's easily moved from place to place in the quarry. Equipped with a 1¼ yd. rock bucket, the 104 will load at the rate of 4 to 6 yds. per minute.

Eimco 104's are low cost, high production, dependable loaders. Write for more information.



Pictures show a typical European installation where Eimco Loaders are contributing to production for a free world.

You Can't beat an Eimco

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:

NEW YORK: 51-52 SOUTH STREET • CHICAGO: 3319 SOUTH WALLACE STREET
BIRMINGHAM, ALA.: 3140 FAYETTE AVE. • DULUTH, MINN.: 216 E. SUPERIOR ST.
EL PASO, TEXAS: MILLS BUILDING • BERKELEY, CALIFORNIA: P. O. BOX 240
KELLOGG, IDAHO: 307 DIVISION ST. • LONDON W. 1, ENGLAND: 190 PICCADILLY

IN FRANCE: SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND: EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

Barber-

B-G

Redi-Fab series

BELT CONVEYORS

EASY SELECTION FROM CATALOGED UNITS

Experience has shown that most of your belt conveyor requirements are met by units that form a specific segment of the vast Barber-Greene Conveyor line. That segment is the Redi-Fab series—the conveyors sizes you most frequently need. These conveyors have been engineered and conveniently cataloged in a wide variety of small increments of width, length and horsepower. Redi-Fab series components—truss sections, drives, takeups, power units, terminals and complete accessories—are "packaged" for off-the-shelf delivery.

FAST QUOTATION, DELIVERY, ERECTION

Actually, you can select your Redi-Fab Conveyors and order the proper components, directly from Catalog RF—an entirely new approach to conveyor selection. Better still, work with your B-G distributor representative. Without costly time-consuming engineering, you can choose the conveyor that exactly meets your needs. Quotation and delivery are faster because you select from standard, pre-built units normally available from distributor or factory stock. Erection is simple—all units are delivered clearly marked for fast, easy assembly.

NOW More than ever, machines must be used most effectively. Redi-Fab Conveyors offer the fast, sure way to release shovels, cranes, tractors and the like for more productive work — to minimize manpower requirements and increase productivity. Send for your copy of Redi-Fab Catalog RF.

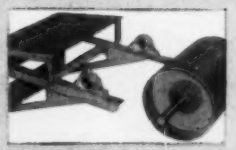
see your B-G distributor

Greene

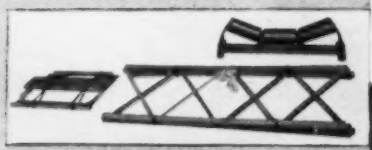
"PACKAGED" UNIT CONSTRUCTION

HERE ARE TYPICAL REDI-FAB PACKAGES...

Foot End—available factory-assembled, or in "packaged" components



Head End

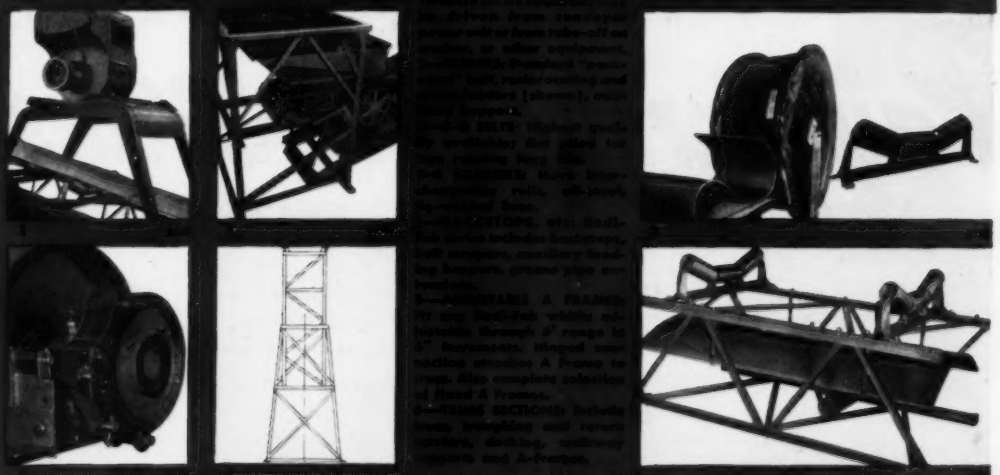


Intermediate Section—panel package, frame package and carrier

Redi-Fab "packages" are logical, convenient groups of parts—or factory-assembled components packed or bundled for individual shipment. This saves shipping costs, simplifies stocking, ordering, erection and future alterations.

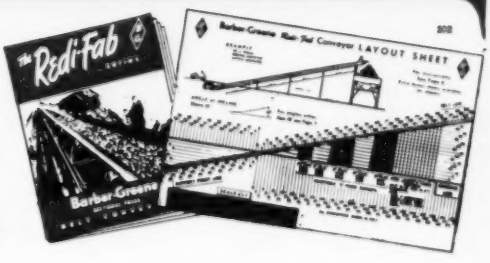
All packages are clearly marked for easy assembly. All the engineering has been done at the factory. Your Redi-Fab Conveyor can be assembled quickly by a few semi-skilled men.

WIDE CHOICE OF COMPONENT EQUIPMENT & ACCESSORIES

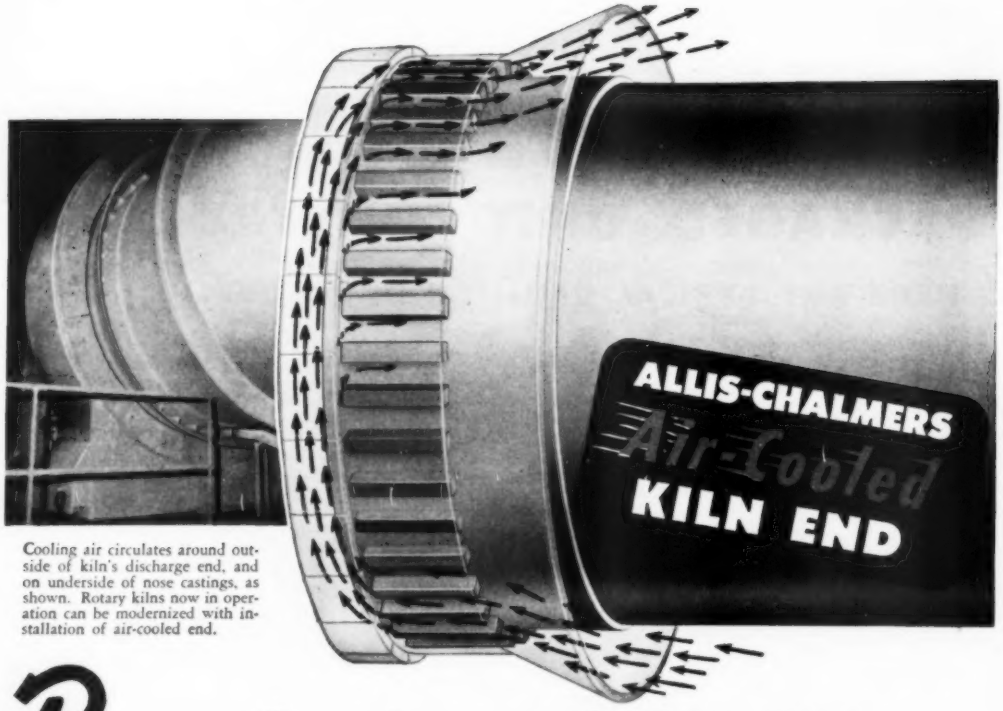


send for Redi-Fab catalog

The new 40-page catalog makes it simple for you to figure your own conveyor requirements if you wish. No knowledge of horsepower required. The catalog makes possible the proper selection of the conveyor with the correct size of drive and motor. In fact, with the new layout sheet in the Redi-Fab Catalog, you can make your own layout—accurately, down through all details including locating the A-frame supports. Write for your copy, or ask your B-G distributor.



BARBER-GREENE COMPANY
AURORA, ILLINOIS, U. S. A.



Cooling air circulates around outside of kiln's discharge end, and on underside of nose castings, as shown. Rotary kilns now in operation can be modernized with installation of air-cooled end.

Pays for Itself in 2 to 3 Years

...IN REFRACTORY SAVINGS ALONE!

BIG REFRACTORY SAVINGS . . . Discharge end of kiln shell stays cool, round and rigid. Refractory brick at discharge end lasts longer because air-cooled discharge end eliminates warpage or end distortion.

BIG MAINTENANCE SAVINGS . . . Fewer shut-downs to replace end brick. Less loss of valuable production time. Savings in brick, labor and downtime will pay for air-cooled end several times over during life of kiln.

BIG FUEL SAVINGS . . . Air-cooled discharge end makes possible a positive air seal between firing hood and kiln. Temperature inside kiln is not decreased by infiltration of cold air. Result — *fuel savings!*

A-3566

Get more facts from the A-C representative in your area . . . or send for Rotary Kiln Bulletin 07B6368A. Allis-Chalmers, Milwaukee 1, Wisconsin.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

Pulverator is an Allis-Chalmers trademark.

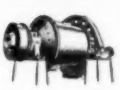
Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverator

Vibrating Screens

Jaw Crushers

Gyratory Crushers


Grinding Mills

Kilns, Coolers, Dryers

IN THE PIT! IN THE PLANT!

save your rustable metal surfaces indoors and out!

STOP RUST! with RUST-OLEUM

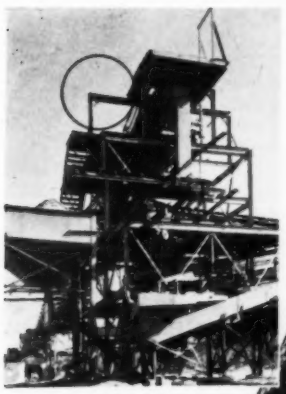
Protect Your Equipment, Pipes, Conveyors, Crushers, Dusters, Metal Structures, Tanks, etc.

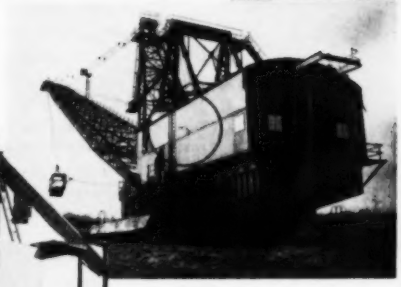
RUST-OLEUM can do a whale of a job for you in helping to resist fumes, dust, rain, snow, moisture, and weathering! So easy to apply that *one man* often does the work of two – just wirebrush and scrape with sharp scrapers to remove rust scale and loose particles – then apply by brush, dip, or spray directly over remaining rust! Costly sandblasting and chemical pre-cleaning are not usually required. You save time, labor, money – you beautify as you protect because RUST-OLEUM is available in all colors, aluminum and white! Get the facts today. Prompt delivery from Industrial Distributors in principal cities in the United States and Canada.

RUST-OLEUM CORPORATION
2718 Oakton Street, Evanston, Illinois

May be applied directly over rusted surfaces

Available in all Colors, Aluminum and White





Look for this label — be sure it's genuine RUST-OLEUM

CLIP THIS TO YOUR LETTERHEAD

Mail To: Rust-Oleum Corporation
2718 Oakton Street,
Evanston, Illinois

RUST-OLEUM STOPS RUST!

- ☐ Have A Qualified Representative Call
- ☐ Full Details On Free Survey
- ☐ Complete Literature
- ☐ Nearest RUST-OLEUM Source

THE EXPERIENCE OF A PIONEER CANNOT BE ACQUIRED OVERNIGHT

The men who led the westward movement of our people across America's plains and mountains had to learn many of their lessons from one unfailing teacher. That teacher, then and to this day, is Experience. There is no substitute for it. You cannot enjoy its benefits by reading about it, nor merely by copying the actions of others or voicing, parrot-like, their well-learned principles. This is as true in learning how to protect fuels, lubricants and machinery from dirt as it was in learning how to protect those pioneering settlers from hunger, thirst or the attacks of savages. So we say: *The makers of Winslow Filters and Elements have been pioneering the principle and successful application of Full-Flow filtration for nearly twenty years.* We take pride in original patents which we hold, and we congratulate those other manufacturers who are finally beginning to endorse the same ideas. But to those of you who are buying *full-flow filters*, we repeat: The experience of a pioneer cannot be acquired overnight. For added value born of experience, specify Winslow Filters!

FOR EVEN GREATER SAFETY, REMEMBER THE WINSLOW WARRANTY. ASK ABOUT ITS PROTECTION OF *YOUR* COSTLY EQUIPMENT!

WINSLOW FILTERS

Winslow Engineering Company 4069 Hollis Street, Oakland 8, California

"CAT" DIESEL ENGINES BACK-TO-BACK:

a winning pair!

Using two "Caterpillar" Diesel Engines, the Belle Glade Rock Co. of South Bay, Fla., collects a payoff of 100 yards of aggregate fill an hour.

A "Cat" D318 Diesel Engine powers its Northwest ¾-yard dragline which loads lime rock into a Cedarapids Crusher driven by a "Caterpillar" D315 Diesel Engine. The fill is used for streets, roads and construction.

Operating "Caterpillar" Diesel Engines as a team is bedrock common sense. When you standardize on these dependable power plants, you get standardized products. Many of their parts are interchangeable—saving you a lot of wasted motion and expensive down-time.

Then, too, with "Caterpillar" equipment you get the benefit of swift, reliable service. Your "Caterpillar" Dealer knows your equipment and problems.

"Cat" Diesel Engines are built for long, productive hours of work. You can stretch their money-making life with a few minutes of good preventive maintenance each day. Nobody loses when minutes of maintenance become hours of production.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

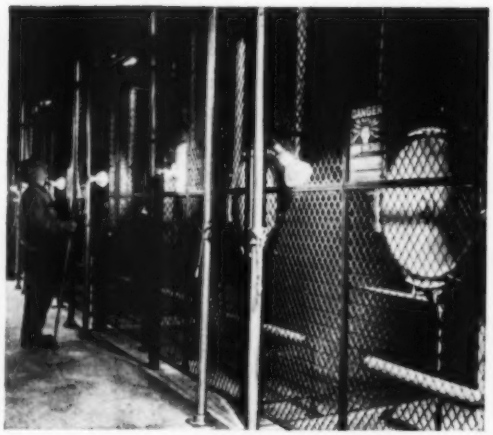
CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

REDUCE CEMENT

Modernize electrically with efficient dust-recovery systems—to increase cement output, cut plant cleaning costs, improve community relations!



1. Modern electrostatic precipitation system at this Eastern cement plant—rated for 490,000 cubic feet of stack gas per minute—comprises 6 units or 18 sections, each with its own high-voltage rectifier and transformer enclosed in individual wire cages. Shown here are six of the cages.

2. Inside each of the cages, the mechanical rectifier is driven by a G-E induction motor and power is supplied to the precipitator through a G-E, 25-kva, 75,000-volt secondary transformer, in service for many years. Equipment in each cage is grounded out when operator enters.

Here is one of today's biggest opportunities to increase cement output—and at the same time improve community relations through the elimination of nuisance caused by airborne dust. With modern precipitation equipment—mechanical or electrostatic or both—you can profitably recover daily many barrels of cement dust that would otherwise be lost, and reduce plant-cleaning costs as well.

Better engineering means better performance. While General Electric does not manufacture complete precipitation equipment, it does work closely with precipitation manufacturers in building the needed electric equipment. And G.E. has played a part in development of the process almost since its beginning. That means—when you specify G-E power equipment for your precipitation apparatus—you're assured of experienced engineering and greater reliability of performance.

Whatever your dust-recovery system requires, your G-E representative can offer many cost-saving recommendations. Call him at your nearest G-E office, and meanwhile send for Bulletin GEA-5212 that tells the whole story on electrostatic precipitation. *General Electric Company, Schenectady 5, New York.*

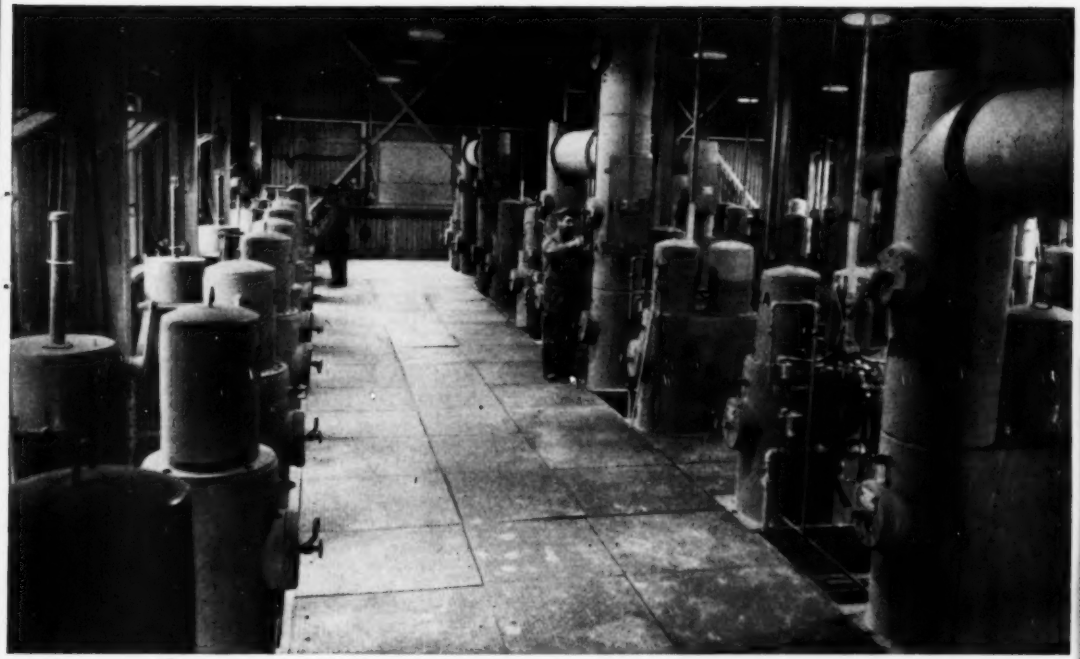
***New G-E Motor Selection and Application Course,** a "More Power to America" program, can give your workers more motor "know-how" in 9 easy-to-take lessons. For details, send for Bulletin GEA-4938-16.*

You can put your confidence in—

GENERAL ELECTRIC

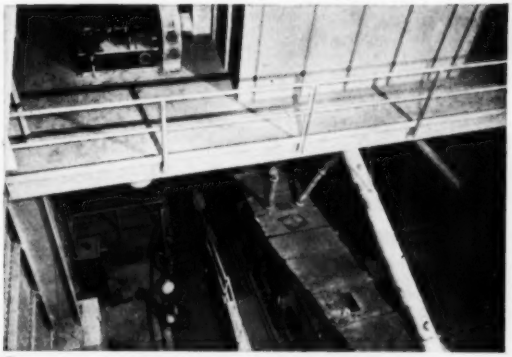
658-7

DUST LOSSES



3. **"Treater" room** (part of the plant's electrostatic precipitation equipment) contains insulator supports for a framework of 9000 pipes (anodes) and 5000 wires (cathodes) which hang in the pit under the floor where the gases are ionized. Dust collected on the pipes is periodically "rapped" and falls by gravity into bins below.

4. **"Rapped" dust from "treater" room** is discharged from individual bins into air slide conveyors and then to a screw conveyor which collects and transports the recovered dust back into the plant's processing. A G-E 10-hp gear-motor (background, right) drives the screw conveyor.



5. **A mechanical dust-recovery system** is used in the plant's primary-crusher building. Dust is sucked through ducts by a collector fan driven by a G-E 20-hp induction motor (top left), and collected in bags in a metal-enclosed room (top right). When bags are "rapped" by a vibrator driven by a G-E ½-hp gear-motor, dust falls into conveyor and re-enters the plant's processing system

Can your rear-dump

Stripping bauxite in Surinam, Billiton Mines replaced their railroad network with 9 Tournarockers. In spite of 10% grades, extreme heat, and 120" annual rainfall, each unit delivers 150 cu. yds. of overburden hourly on 750' hauls.

Here's how these advantages pay off

Try one, buy two in California

Monolith Portland Cement Co. rented a Tournarocker for their mountain-face limestone quarry at Monolith. Its manouverability over winding mountain roads, in restricted load and dump areas, and its output were so satisfactory the company bought both the first unit and another. The 2 Tournarockers now deliver 160 tons hourly on 400' cycles, all the shovel can dig.

Boosts output in Pennsylvania

Loaded with 15 yds. of clay, Tournarocker hauls 700' up 10% grades, 820' up 4%... strips 120 yards hourly for J. Robert Bazley, Inc. at their Mt. Carmel, Pa., mine. 4200' cycle is completed in 7.4 min. . . . smaller trucks take 7.9 min. for same trip. "We're particularly impressed with Tournarocker's clean dump and its safety when rear wheels are over bank," says Owner Bazley.

LET

Mail today to: **R. G. LeTOURNEAU, INC., Peoria, Illinois**

NAME_____ TITLE_____

COMPANY_____ Dept. or Div._____

STREET_____

CITY_____ STATE_____

Send us specs., price and performance data on

- ☐ 35-ton or larger Tournarockers
  - ☐ 16-ton ☐ 9-ton
- ☐ Also send facts on 180 h. p., rubber-tired Tournadozer.

haulers compare with C TOURNAROCKERS ?

Turn around in a 13′ 9″ radius

When Tournarockers work a cramped rock job, there's no time wasted "backing all over the place" to load or dump. Because of its 2-wheel prime mover and positive-power electric steer, 18-ton Tournarocker turns in any footing within 13′ 9″ radius (less than half the rig's 29′ overall length), is ideal unit for work in restrictive quarters.

Eliminate tire breakage in rough going

Tournarocker load is carried by four 21.00 x 25 low-pressure tires. These big tires reduce rolling resistance of duals . . . are bigger, heavier, stronger than duals . . . better adapted to withstand load and haul shocks. They have no divided face to wedge in rock fragments that wear and tear. They roll easily over rocks that might concentrate entire load on one or the other of the lighter duals, and result in bruising or breaking the fabric.

Absorb punishment without costly repairs

Tournarocker's 3-ply, steel-grid bowl resists damage normally done when big-chunk rock is loaded. As a result, most welding and patching is eliminated. In addition, because Tournarockers have no frame, sub-frame, springs, spring hangers, drive shaft, front steering wheels or hydraulic system, many trouble spots are eliminated . . . spare part requirements reduced . . . maintenance costs kept down.

Work and turn on steep grades in safety

With positive power steer, and instant electric controls, and 4-wheel, multiple-disc air brakes (3763 sq. in. total braking surface, more than 4 times that of other haulers), loaded Tournarocker may be driven at high speeds down narrow, steep winding haul roads with complete safety.

Drive anywhere . . . dump safely over bank

Power-proportioning differential (which delivers up to 4 times the power to drive wheel on firmest footing) — plus the extra flotation and traction of giant tires — get rig through footing that stops conventional haulers. In addition, because it has power on front wheels, Tournarocker backs safely to edge of fill, dumps load clear over bank . . . eliminates most dozer clean-up.

Interchangeable for further profits

For other jobs, you can easily interchange the 186 h.p. C Tournarocker prime mover with 4 auxiliary hauled units . . . 14-yd. Carryall Scraper, 18-yd. bottom-dump hauler, flat-bed, and 15-ton crane. Other Tournarockers (9, 35 and 50-ton) may also be interchanged with similar trailing units, each costing about 25% of original unit price. Prime mover change takes only a few hours. This equipment travels via highway or cross-country to their assignments. Ask your LeTourneau dealer for full details.

Carryall—Trademark Reg. U. S. Pat. Off.
Tournarocker—Trademark

Whips tight quarters in Sweden

Svenska Vag Akt. and Nya Asfalt Akt. are nearing completion of a 785,000-yd. 36′ wide, 40′ high, and 2.9-mi. long underground tail-race tunnel in Gavleborgs Province. "Our Tournarocker is superior to other units," says Chief Project Engineer S. Westby. "Its greatest advantage is its maneuverability and 13′ 9″ turning radius."

Licks 10% grades in Arizona

Two 35-ton Tournarockers, stripping overburden for Bagdad Copper Corporation at Bagdad, Arizona haul loads, which by actual weight tests, average 37½ tons each. Time for each 4500′ cycle—including 2 min. to load, and 4½ min. to haul 2250′ (half of the distance up 10% grades) averages only 11.2 minutes. Dump time varies from 35 to 40 seconds.

** Trademark * Trademark Reg. U. S. Pat. Off.

122 or 186 h.p. | 14-yd., 18-ton | 18-yd., bottom-dump | 30-ton, flat-bed | 15-ton lift

Crusher Jaws Rebuilt with Coast Metals Hard-Facing REMAIN ON THE JOB AFTER 8 YEARS

CM-112 Hard-Facing Welding Rod Increases Jaw Life Per Facing 4 to 1

A large southern mineral company has found the way to keep these crusher jaws on the job year after year. It rebuilds them with Coast Metals Alloy No. 112.

The jaws are used for crushing feldspar. They operate, on an average, 8 hours per day, and crush approximately 22,000 tons annually.

Despite the rugged nature of the operation they handle, and the volume of material processed, these jaws are giving as efficient service today as when they first went to work 8 years ago. Not only has over-all jaw life been greatly increased, but, with CM-112, working surfaces *need only be coated 3 times a year*—in contrast to 12 times previously.

Many other hard-surfacing materials have been tried by the mineral company, but results achieved by CM-112 have proved *outstanding.*

Let us show you how CM hard-facing alloys can meet your requirements. Whether it be bucket teeth, crusher teeth, muller tires, augers—or any other part that must withstand severe wear and tear—and you'll find coating with CM specialized weld rods results in *many times the production obtainable from unfaced units.*

So don't *replace—reface* with CM Alloys. You'll minimize downtime, slash maintenance costs, keep your production running smoothly, step up your output.

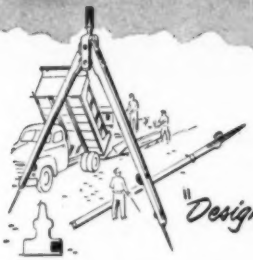
COAST METALS, Inc.

Little Ferry, N. J.

COAST METALS (CANADA), LTD., Hamilton, Ontario

PRODUCERS OF SPECIAL HARD-FACING ALLOYS FOR THE ROCK PRODUCTS INDUSTRY

use MARION BODIES AND HOISTS dump trailers for haulage efficiency



"Designed on the Job"

Many Marion owners are purchasing additional Marion Dump Trailers. These owners know the extra benefits that can be expected from Marion equipment.

They know that these benefits mean dollars saved . . . because of greater load-carrying capacities, less maintenance cost and fewer man-hours per-ton payload.

Marion all-welded Trailer Bodies are constructed to withstand sagging or twisting when loads are uneven or extra heavy. Marion's Heavy-Duty Hoists operate with extremely low, even oil pressures . . . without high-surge points during any part of the lift.

Marion Hoists are specially designed to provide load stability throughout the dumping cycle . . . thus reducing the possibility of overturning when operating under adverse conditions.

Marion's "Designed on the Job" Dump Trailers and heavy-duty hoists have the built-in endurance that insures a dependable, performance-plus operation.

Get all the facts . . . call your nearby Marion Distributor or write direct—today!

MARION BODIES AND HOISTS

METAL PRODUCTS CO.
Marion, Ohio, U. S. A.

Manufacturing a complete line of standard and special Hydraulic Hoists and Dump Bodies

P&H STABILITY

MEANS FASTER DIGGING!

Whatever the attachment . . . shovel, dragline, hoe, clamshell or pile driver . . . P&H gives you more production. Why? Because P&H's lower center of gravity and better weight distribution let you apply more power at the business end. You can put "more on the hook" — dig harder — work faster!

Modern design contributes still more speed with advantages like true tractor-type crawlers, easy hydraulic control, all-welded construction, live roller circle — and many others. See your P&H dealer today.

Remember: faster production means lower costs!

HARNISCHFEGER CORPORATION

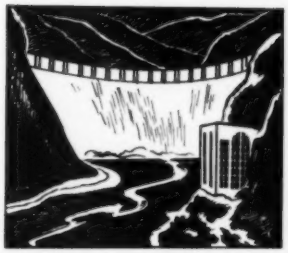
4451 WEST NATIONAL AVENUE • MILWAUKEE 14, WISCONSIN

YOUR P&H DEALER IS READY WITH ALERT SERVICE AND GENUINE P&H PARTS TO KEEP YOUR JOBS ON SCHEDULE.

P&H Power Shovels and Truck Cranes are more easily converted for various types of service because hoist and digging drums are on one shaft. The need for auxiliary shafts and gearing is eliminated. Write for literature on the size you need. Sizes up to 8 cu. yds., gasoline, diesel or electric power.

the P&H Line

SHOVEL · DRAGLINE · BACKFILLER · CRAWLER CRANE · MAGNET CRANE · TRENCH HOE · PILE DRIVER · TRUCK CRANE



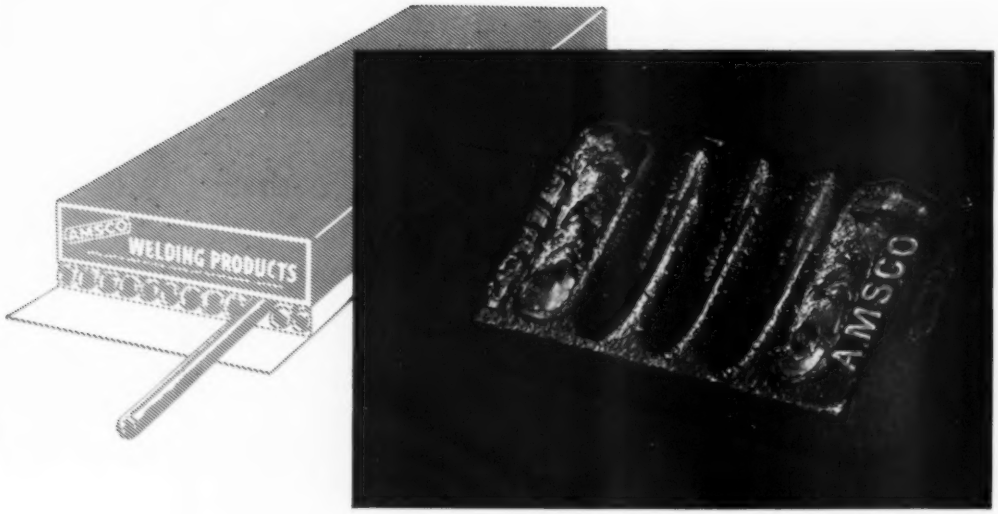
SIMPLICITY helps build the Garrison Dam

Two Simplicity Gyrating Screens in operation at the Becker County Sand and Gravel Company in Detroit Lakes, Minnesota, are helping to produce fine aggregate for the Garrison Dam project located 40 miles away. The first Simplicity Screen is a 5′ x 12′ Double Deck Scalper that works in closed circuit with the crushers. The second is a 5′ x 12′ Triple Deck Simplicity Screen that feeds minus 3/16″ material to the hydraulic classifier and the dewaterer. These Simplicity Screens are doing a splendid job for Becker because Simplicity's famous gyrating action gives them fast, accurate sizing at a low operating cost. For complete information on Simplicity equipment, consult a Simplicity sales engineer or write us today.

111

Sales Representatives in all parts of the U.S.A.
FOR CANADA: Canadian Bridge Engineering Co., Ltd., Walkerville, Ontario
FOR EXPORT: Brown and Sites, 50 Church Street, New York 7, N. Y.

Simplicity
TRADE MARK REGISTERED
ENGINEERING COMPANY • DURAND, MICHIGAN



NOW! Wear your point and have it too!

This new catalog can help you save money on repair costs . . .

It's packed with information on the new "Wear-Sharp"—and the entire AMSCO Weldment line. Complete with installation instructions and helpful hints on welding. Be sure to ask for your free copy.

AMSCO "Wear-Sharps" are available in two quickly and easily installed types:

Crescent Back
For application to worn tooth with minimum fitting.

Straight Back
For application after worn tooth is beveled.

New AMSCO "Wear-Sharp" repointer holds a straight edge as it wears . . . and stays sharp longer!

Here's a new tooth repointer that is just what you've been looking for . . . the AMSCO "Wear-Sharp", *and it does exactly what the name implies.*

Note the groove design on this new repointer shown above. The outside and end grooves are AMSCOATED with Amsco Hardfacing Electrodes specially recommended for this purpose, while the inner grooves are left as they are. Result?

The Amscoated grooves wear slower, thus equalizing wear along the entire cutting edge and making the point stay sharp longer. Rounded, blunted corners that cut digging efficiency and waste power are completely eliminated for the life of the repointer!

The "Wear-Sharp" is already setting new records in service life and digging efficiency. For example, an Eastern mine reports *6 times longer service than any repointer ever used before.*

The next time your dipper teeth need repointing, try the new "Wear-Sharp"! Write today for illustrated catalog shown at left—and name of your nearest AMSCO Distributor.

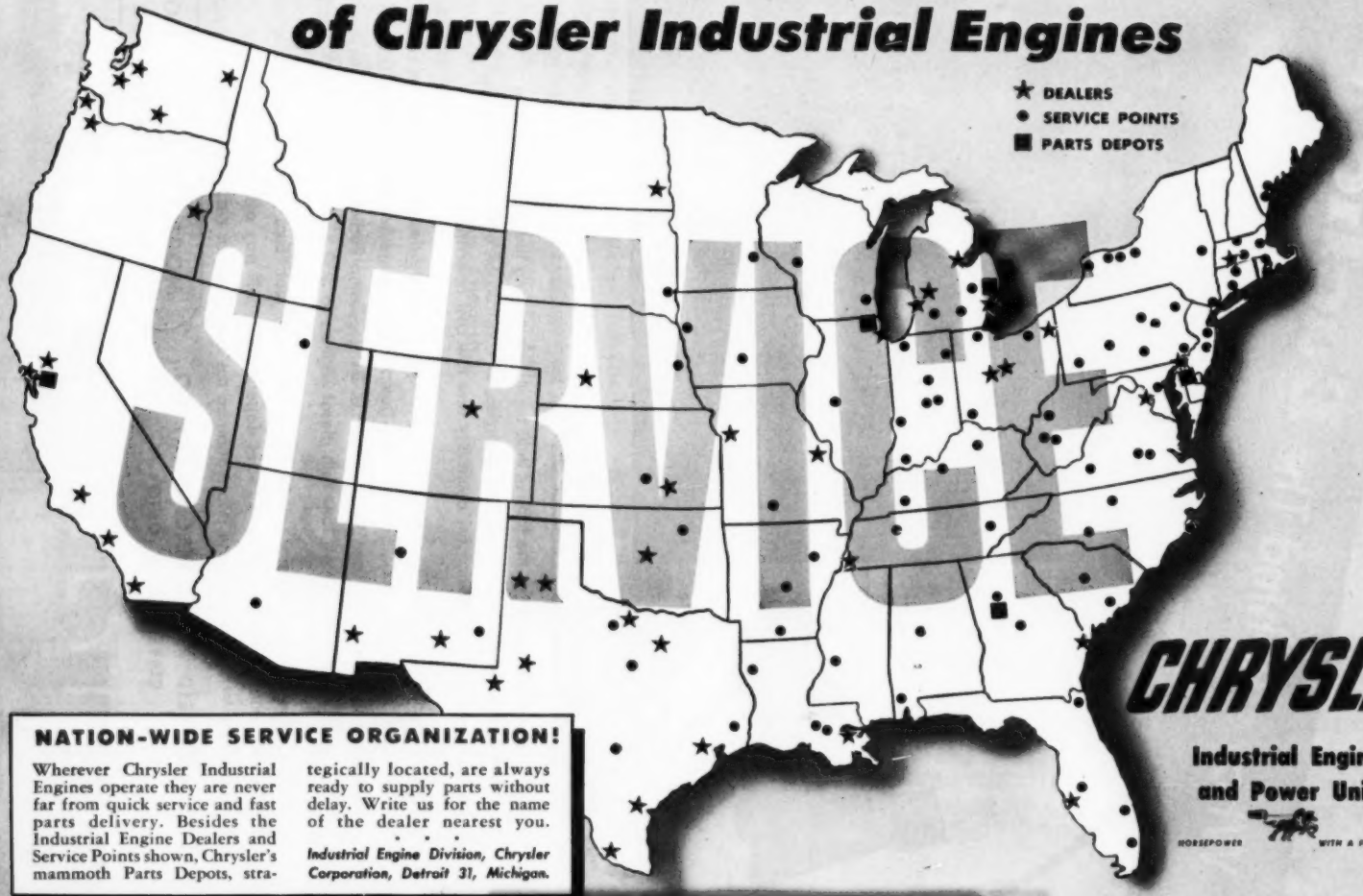
AMSCO WELDMENTS
THE RIGHT WAY TO MAKE REPAIRS

Brake Shoe **AMERICAN MANGANESE STEEL DIVISION**
396 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

THE GREAT INVISIBLE FEATURE

of Chrysler Industrial Engines



NATION-WIDE SERVICE ORGANIZATION!

Wherever Chrysler Industrial Engines operate they are never far from quick service and fast parts delivery. Besides the Industrial Engine Dealers and Service Points shown, Chrysler's mammoth Parts Depots, strategically located, are always ready to supply parts without delay. Write us for the name of the dealer nearest you.

• • •

Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

CHRYSLER

Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE

What's Behind The Euclid Name?

* Dependability

Euclids are engineered for the job . . . built for efficient, long life performance in off-the-highway service. In mines and quarries, on construction and industrial jobs, "Eucs" have earned their reputation for durability and low cost operation.

Plenty of power . . . large capacity for bigger loads . . . body designs for all types of materials . . . earth, ore, rock, or coal. Rear-Dump Euclids range in capacity from 10 to 34 tons, have diesel engines from 125 to 400 h.p. Bottom-Dump Euclids have capacities of 13 to 50 cu. yds., 20 to 40 tons with diesel engines to 300 h.p.

Repeat orders prove customer satisfaction. Owners say that "Eucs" actually cost less to own than any other hauling equipment. Euclid dependability will pay off on your present or future jobs. Write for complete information on the Euclid line, or call your distributor today.

The EUCLID ROAD MACHINERY CO.,
CLEVELAND 17, OHIO

MORE LOADS PER HOUR—
MORE PROFIT PER LOAD

EUCLIDS *Move the Earth*

Eaton 2-Speeds are designed and built to stay on the job

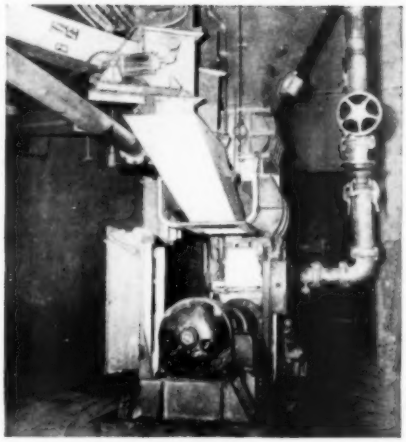
THESE EXCLUSIVE Eaton features are the reason why: planetary gearing distributes pressure and wear over a number of small gears, resulting in lower unit stress; forced-feed oiling system provides positive lubrication to all moving axle parts at even slowest vehicle speeds; extra heavy construction eliminates the possibility of distortion or misalignment under excessive loads. These three features add up to longer parts life, outstanding dependability, minimum time in the shop and low maintenance cost. Let your dealer explain how Eaton 2-Speeds will help your trucks haul more, faster, longer, at lower over-all cost.

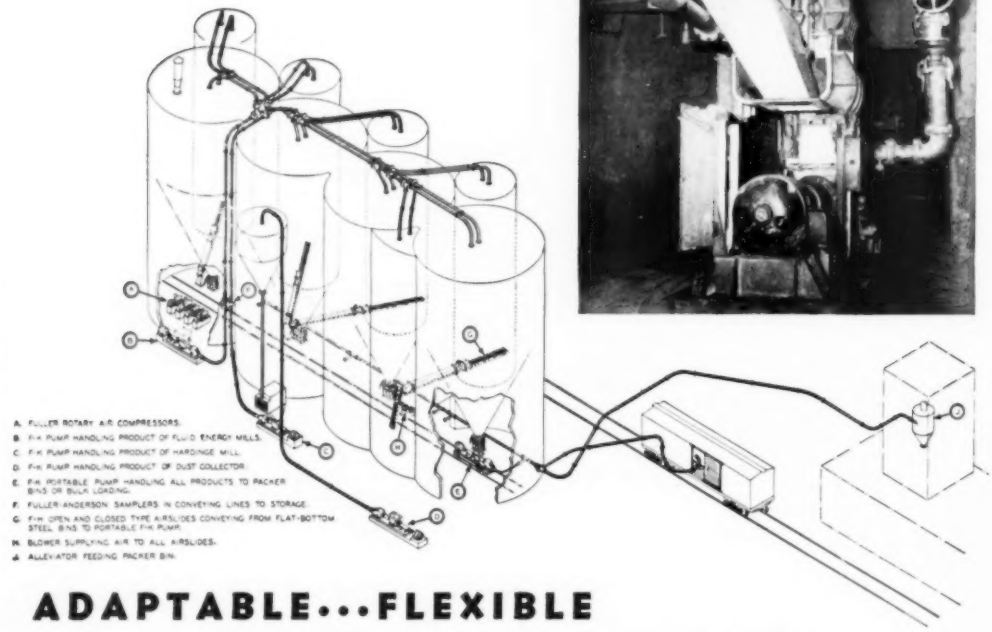
EATON
2-Speed Truck
AXLES

Axle Division
EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

Fuller-Kinyon Portable Pump underneath silos. F-H Airslide (upper left) from flat-bottom bin, for delivery to pump.




A. FULLER ROTARY AIR COMPRESSORS.
B. F-K PUMP HANDLING PRODUCT OF FLUID ENERGY MILLS.
C. F-K PUMP HANDLING PRODUCT OF HARDINGE MILL.
D. F-K PUMP HANDLING PRODUCT OF DUST COLLECTOR.
E. F-K PORTABLE PUMP HANDLING ALL PRODUCTS TO PACKER BINS OR BULK LOADING.
F. FULLER-ANDERSON SAMPLERS IN CONVEYING LINES TO STORAGE.
G. F-H OPEN AND CLOSED TYPE AIRSLIDES CONVEYING FROM FLAT-BOTTOM STEEL BINS TO PORTABLE F-K PUMP.
H. BLOWER SUPPLYING AIR TO ALL AIRSLIDES.
J. ALLEVATOR FEEDING PACKER BIN.

ADAPTABLE...FLEXIBLE

FULLER-KINYON and F-H AIRSLIDE® CONVEYING SYSTEM

Conveying of dry pulverized materials in bulk, by air, is the efficient, economical, modern way. Materials such as talc, clays, Portland cement, pulverized coal, fly ash, limestone dust, Fuller's earth, catalysts, can be handled.

Adaptability and flexibility are important features of the Fuller-Kinyon and Airslide Systems. The plant illustrated originally comprised four concrete storage silos, served by a Fuller-Kinyon Portable Pump, operated on a track underneath the silos, for conveying talc to packer bin and bulk-car loading. Later, storage was increased by the addition of five flat-bottom steel bins adjacent to the concrete silos. For economical conveying from these bins, F-H Airslides were installed, to convey to the F-K Portable Pump. Later, for more advantageous packing and loading, the packer bin was moved to a new location. These additions and changes required no major alteration to the Fuller-Kinyon system, merely the extending of the conveying pipe line to the new packing plant location.

Pneumatic conveying systems can be installed without interfering with existing structures or equipment, without interrupting production. May we suggest that you have us make a study of your conveying problems. Our findings and recommendations may give you an entirely new concept of conveying.

Fuller Company is the exclusive manufacturer of air gravity conveyors, except for use in motor vehicles, under Huron Portland Cement Company U. S. Patent Nos. 2,316,814, 2,517,837, 2,527,394, 2,527,455, 2,527,466, 2,527,488 and Patents Pending.

Fuller

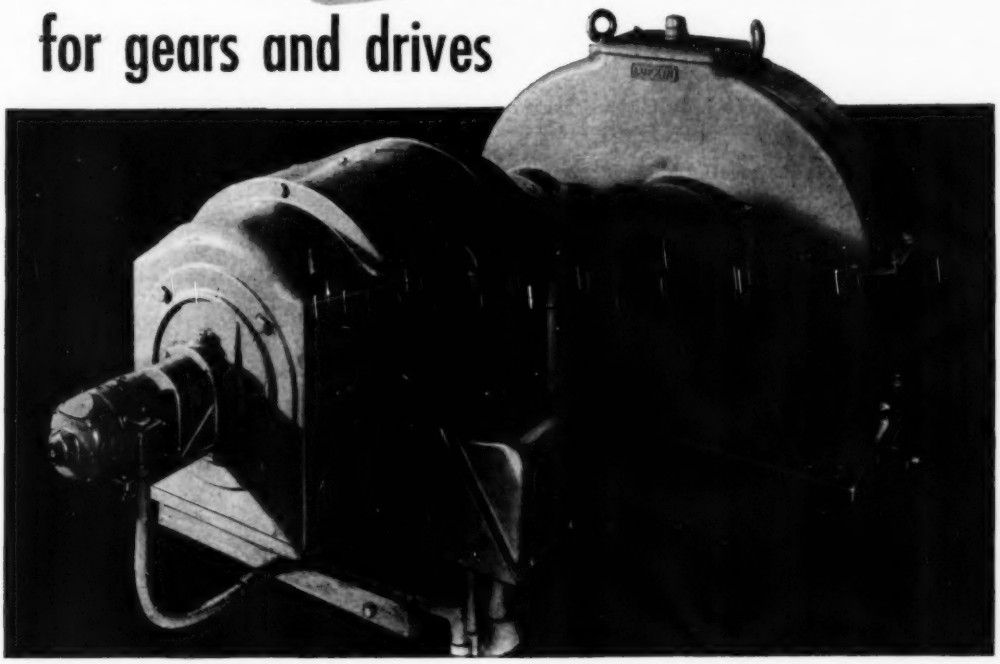
DRY MATERIAL CONVEYING SYSTEMS AND COOLERS • COMPRESSORS AND VACUUM PUMPS FEEDERS AND ASSOCIATED EQUIPMENT

FULLER COMPANY,
Catasauqua, Pennsylvania
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.

G-78

GULF E.P. LUBRICANTS

provide an *extra* margin of protection for gears and drives



When you switch to Gulf E. P. Lubricants for the lubrication of gears and drives throughout the plant, you take a positive step toward reduced maintenance costs. Specially compounded to withstand shock loads and high pressures in the toughest service, Gulf E. P. Lubricants are ideal for all types of gears, including spur, helical, bevel, spiral, worm, and hypoid gears.

Because of their greater lubricating value, you get this practical advantage—you can often eliminate one or more grades of gear lubricants. Take the case where two straight mineral oils, one having a viscosity of 75 S.U.V. @ 210°F. for slow speed spur and helical gears, the other having a viscosity of 150 S.U.V. @ 210°F. for worm gears are used. It is usually possible to replace these with one grade of Gulf E. P. Lubricant, the viscosity of which would be low enough for the spur gear application, while its higher lubricating value would make this product suitable for the worm gear drives.

Other advantages: nonfoaming—saves loss of lubricant and mopping up; tenacious—minimizes throwoff; extremely stable for this type of lubricant; help prevent rust; and they are just as suitable for the lubrication of all types of bearings.

Gulf E. P. Lubricants are available in the proper viscosity for every gear requirement, ranging from 55 to 1050 S.U.V. at 210°F. For specific recommendations for your equipment, call in a Gulf Lubrication Engineer today. Write, wire, or phone your nearest Gulf office. Gulf Oil Corporation · Gulf Refining Company, Pittsburgh 30, Pa.

GULF SERVES INDUSTRY

Pre-testing in Lab ELIMINATES GUESSWORK for Projected Process

PROBLEM...

A mining company wanted to know if lightweight aggregate could be produced profitably from material available in a company-owned shale deposit.

"Can a product be made that will meet commercial aggregate specifications?" And — "Will the process be commercially practical?" The customer wanted answers to these questions before going ahead with full-scale operations.

WHAT WAS DONE...

A sample from the shale deposit was sent to the Allis-Chalmers Process Research Laboratory. Tests in the Laboratory's 15-ft rotary kiln and gyratory crusher indicated that the product would meet the highest aggregate standards . . . and that the process would yield a healthy margin of profit.

RESULT...

This company was able to set up operations on a commercial scale with the *assurance* that the product would be readily salable . . . and with a complete knowledge of the costs involved.

A-3675

ALLIS-CHALMERS
Research
Laboratories

PILOT PLANT FACILITIES ARE AVAILABLE FOR YOUR USE IN...

Grinding
Crushing
Concentration
Food, Chemical and
Grain Processing
Oil Extraction
Pyro-Processing

The Laboratory's complete facilities for chemical and physical analysis have also been used profitably by hundreds of clients. All testing services include the technological skill of the Laboratory's personnel, who are guided by Allis-Chalmers invaluable experience in engineering equipment for industry.

Testing is done on a confidential basis. Charges are based on costs. Estimates for test work can be obtained from the A-C representative in your area or by writing Allis-Chalmers Research Laboratories, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-C ALLIS CHALMERS

Send for Laboratory Bulletin 07B6119B.

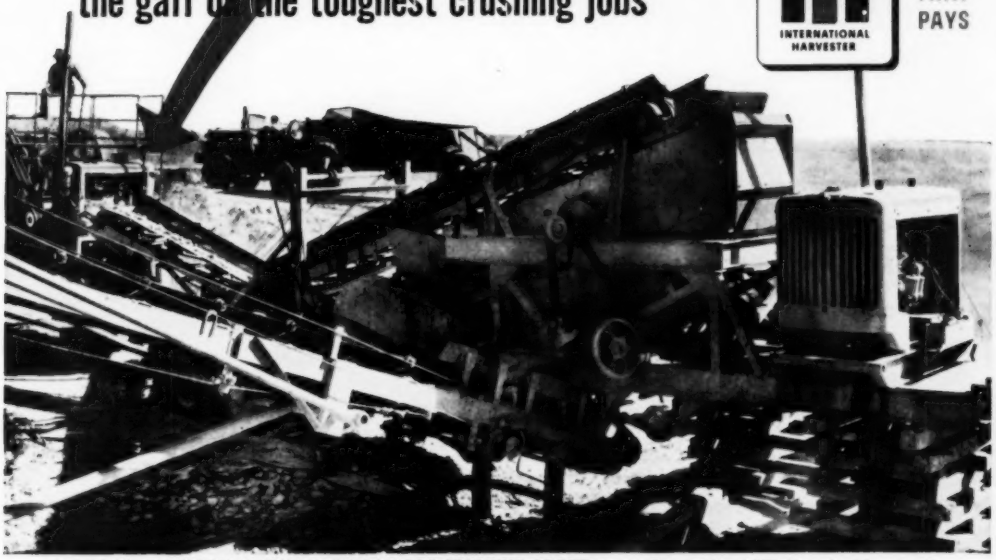
Fourteen Years on the Rock Pile

Dean Word proves that Internationals stand the gaff on the toughest crushing jobs

INTERNATIONAL

INTERNATIONAL HARVESTER

POWER THAT PAYS



NEW AND OLD INTERNATIONALS TEAM UP FOR CRUSHING PROFIT. A new International UD-24 and a 14-year-old International engine (left background) power crushing plant that turns out 700 cubic yards of road rock per 8-hour shift for the Dean Word Company of New Braunfels, Texas.

Dean Word Company purchased a new International UD-24 on the record of a 14-year-old International that has been powering their primary jaw crusher for years.

Superintendent Erwin Smith says: "That old International shows the performance that can be built into an engine. It went to work on our crusher in 1937, gets the valves ground or new rings when we get around to it every four or five years, and it runs as good today as when it left the factory. We bought the new UD-24 on the record of the old engine."

Wherever steady, year-after-year power is needed for the heavy crushing jobs, you'll find Internationals in the pit. Your International Industrial Distributor or Power Unit Dealer will be glad to show you several models to fit your power requirements. Find out about his up-to-the-minute repair shops and his full parts stock, backed by a neighboring International Harvester Parts Depot. Get the facts on International *"Power that Pays."*

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

TIMELY

Sales-Opportunity

in MAY Issue of PIT AND QUARRY

Tie your Sales Story to this *Limestone Issue*

15th ANNUAL

LIME and AGRICULTURAL LIMESTONE SECTION

Send Space Reservation Today — Final Closing Date **April 18th**

Printed on color insert for quick, easy identification.

Special Advantages

for your Advertisement

- Extra long sales-life
- Extra high readership
- Coverage of top buying power
- Special editorial features condition the Advertising
- Printed on India stock for quick, easy identification.

P.S. Last year's issue was the third largest in our 36-year history with **184** Advertising Pages

The May issue of PIT AND QUARRY is held in keenest anticipation by readers because of its unique editorial treatment on the subject of Lime and Agricultural Limestone.

PIT AND QUARRY has long recognized the great importance of the Lime and Agstone Industries. Accordingly, the Limestone Section in May will be devoted to reports of the industry's progress in various sections of the country and to its problems and opportunities for increasingly profitable operation.

The May Limestone Issue will be filed as a reference Number, thus giving your advertisement extra long sales-life.

Limestone Plants need your Equipment . . . NOW

The potential machinery and equipment market in this field is so large it defies even reasonable estimation. Hundreds of plants need your equipment for expansion and replacement. Here's a buying-market for crushers, screens, conveyors, kilns, hydrators, bag-packing machines, hammer-mills, limestone spreaders — just to mention a few.

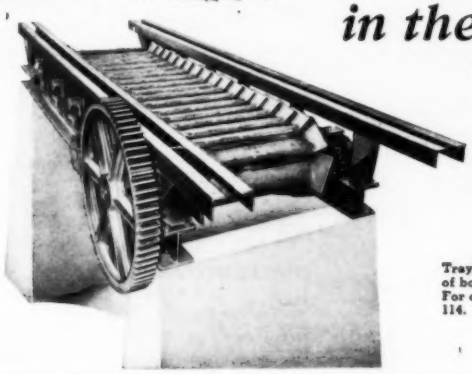
Your advertisement will be placed in the special section with the editorial content. Thus, the reader is editorially conditioned to your sales story. It's an opportunity to sell and serve.

PIT AND QUARRY

431 SOUTH DEARBORN ST., CHICAGO 5, ILL.

in the good old days...

the "paved" road ended a few feet outside of town. At the whim of the weather, travelers "ate dust" or bogged down in axle-deep mud. Today, over 3 million miles of paved road leads us smoothly wherever we wish to go.



Traylor Apron Feeders will increase production of both primary and secondary crushers 50%. For complete details, ask for Traylor Bulletin 114.

AS OUR ROAD SYSTEM spread with the growth of our nation, the need grew for increased production of aggregate—foundation of the modern highway. For 50 years, Traylor has been a leader in providing the stone products industry with new and more efficient stone crushing machinery to keep pace with the need for increased production. Now, and in the future, you can rely on Traylor's growing fund of experience to provide the machinery that will help you do your job better.

Traylor

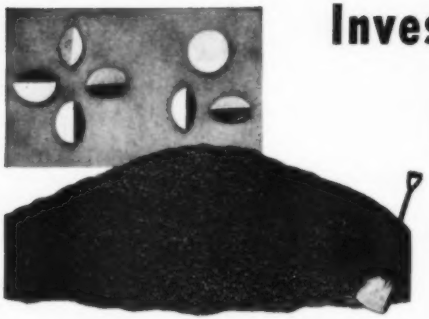
ENGINEERING & MANUFACTURING CO.

476 MILL ST., ALLENTOWN, PA.

Sales Offices: New York • Chicago • Los Angeles
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

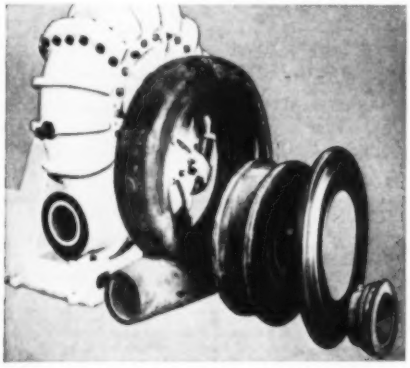
A TRAYLOR LEADS TO GREATER PROFITS

Investigate NI-HARD for your ABRASION PROBLEMS



SEE FOR YOURSELF why NI-HARD cuts grinding costs. Unlike other cast irons, NI-HARD is composed of a multitude of hard carbides firmly embedded in a matrix which is as hard as fully hardened steel. Ni-Hard balls are produced in sizes from $\frac{5}{8}$" to $1\frac{1}{4}$". Balls at left above are sectioned to show soundness.

THESE BALL MILL LINERS of chilled NI-HARD replace rolled steel liners for milling ores. The user previously used all types of liner materials, including manganese steel, chilled iron, etc., before standardizing on NI-HARD.



SOLIDS-HANDLING PUMP PARTS, produced to take full advantage of NI-HARD, include impellers, shell liners, suction side liners, engine side liners, throat and seal rings.

NI-HARD is produced by authorized foundries from coast to coast

Ni-Hard® . . . an abrasion-resisting nickel iron . . . has proved the answer to hundreds of problems involving severe abrasive wear. During the past 20 years it has set notable records for length of service, down-time saving and *ultimate economy* where wear-resistance is the primary requirement. A few typical Ni-Hard applications are illustrated.

At the present time, the bulk of the nickel produced is being diverted to defense. Through application to the appropriate authorities, nickel is obtainable for the production of NI-HARD for many end uses in defense and defense supporting industries. There are authorized foundries, from coast to coast, equipped to produce NI-HARD castings in all common forms and shapes.

SOURCES OF SUPPLY FOR NI-HARD CASTINGS

EASTERN SECTION...

Plattsburg Foundry & Machine Co.
18 White St.
Plattsburg, N. Y.

Engineered Castings Div.
American Brake Shoe Co.
10 Mount Read Boulevard
Rochester 11, N. Y.

Brake Shoe & Castings Div.
American Brake Shoe Co.
230 Park Ave.
New York 17, N. Y.

American Abrasive Metals Co.
460 Coit St.
Irvington 11, New Jersey

Palmyra Fdry. Co., Inc.
Arch St. Station
Palmyra, New Jersey

U.S. Pipe & Fdry. Co.
Burlington, New Jersey

Hardinge Mfg. Co.
240 Arch Street
York, Pa.

Link-Belt Co., Olney Fdry.
180 W. Duncannon Ave.
Philadelphia 20, Pa.

New Castle Fdry. Co.
Mahoning Ave. &
Hobart St.
New Castle, Pa.

The Pennebacker Co.
Emmaus, Pa.

Sprout, Waldron & Co., Inc.
Sherman St.
Muncy, Pa.

Treadwell Engrg. Co.
Lenox & 25th Street
Easton, Pa.

Weatherly Fdry. & Mfg. Co.
Commerce St.
Weatherly, Pa.

Georgia Iron Works Co.
605 12th St.
Augusta, Ga.

Pekor Iron Works, Inc.
P. O. Box 909
Columbus, Ga.

Thomas Foundries, Inc.
3800 10th Ave. No.
Birmingham 1, Ala.

CENTRAL SECTION...

The Brom Mach. & Fdry. Co.
3565 W. 6th St.
Winona, Minn.

Staver Foundry Co.
Box 74
Virginia, Minn.

Bassett Foundry Co.
Adrian, Mich.

Calumet & Hecla Cons. Copper Co.
Calumet, Mich.

Engineering Castings, Inc.
405 S. Linden St.
Marshall, Mich.

The Babcock & Wilcox Co.
85 Liberty St.
New York 6, N. Y.
(Plant: Barberton, Ohio)

Brake Shoe & Castings Div.
American Brake Shoe Co.
109 N. Wabash Ave.
Chicago 4, Ill.
(Plant: Melrose Park, Ill.)

Frank Foundries Corp.
2020 3rd Ave.
Moline, Ill.

Griffin Wheel Co.
445 N. Sacramento Blvd.
Chicago 12, Ill.

Wells Manufacturing Co.
7800 N. Austin Avenue
Skokie, Ill.

Eagle Iron Works
129 Holcomb St.
Des Moines, Ia.

Helmick Fdry.-Mach. Co.
8th St. & Belt Line
Fairmont, W. Va.

Carondelet Foundry Co.
2101
S. Kingshighway Blvd.
St. Louis 10, Mo.

Keller Foundry Co.
1010 E. Jackson Ave.
Knoxville, Tenn.

Arkansas Foundry Co.
1501 East Sixth St.
Little Rock, Ark.

WESTERN SECTION...

Eagle Foundry Co.
75 Horton St.
Seattle 4, Wash.

Union Iron Works
Box 2135
Spokane 2, Wash.

Caird Engineering Works
Helena St. &
Montana Ave.
Helena, Montana

Pacific Ball Mfg. Co.
P. O. 106
Southgate, Calif.

Pacific Foundry Co., Ltd.
3100 19th St.
San Francisco, Calif.

Stanley Foundries
6009 Santa Fe Ave.
Huntington Park, Calif.

Capitol Foundry Co.
Phoenix, Arizona

Darbyshire Steel Co., Inc.
P. O. Box 352
El Paso, Tex.

Texaloy Foundry Co.
1407 Hoefgen
San Antonio 3, Tex.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET
NEW YORK 5, N. Y.

New Ultra-modern Low-Friction truck engines give you

Gas Savings UP TO 14%

Designed for today's Speed Hauling needs!

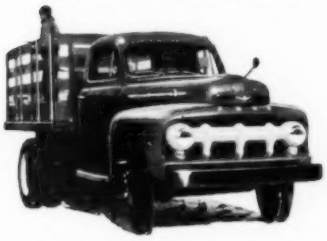
DYNAMOMETER TESTS like this, over 50,000 hours on one engine model alone, proved new Ford LOW-FRICTION engines develop more power per cubic inch, save up to 14% on gas!

New LOW-FRICTION design LIBERATES POWER ordinarily held "captive" by engine friction! IT SAVES GAS! It saves wear!

Good news for truck users! Ford's new, ultra-modern LOW-FRICTION truck engines break away from the traditional "European" long-stroke piston design. They introduce a friction-reducing *short-stroke* in three completely new engines in Ford Trucks for '52.

Ford LOW-FRICTION design incorporates new direct-breathing OVERHEAD-VALVES . . . gives you new HIGH-COMPRESSION, for extra wallop to meet today's Speed-Hauling needs. Here's truck engineering that your Ford Dealer will be proud to tell you more about today!

Availability of equipment, accessories and trim, as illustrated, is dependent on material supply conditions.



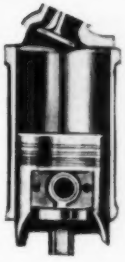
For '52 Ford offers a full line of trucks from half-ton Pickups to 20-ton (G.C.W.) BIG JOBS. 5 great engines from 101 h.p. to 155 h.p., V-8 or Six. 3 new LOW-FRICTION engines, plus famed V-8 (now 106 h.p.) and Big Six (now 112 h.p.)!

NEW LOW-FRICTION DESIGN

OVERHEAD VALVES for deeper direct "breathing"!

HIGH-COMPRESSION punch with regular gas!

SHORT STROKE cuts piston travel up to 20%!



Friction reduced in many ways: Autothermic Pistons have built-in clearance control. **Precision-molded Alloy Crankshaft** cuts friction and wear at journals. **New Full-Flow Oil Filter** screens every drop of oil every time around. **Result:** Up to 30% cut in friction "power-waste" . . . the big reason why Ford can promise gas savings up to 14%!

FREE

MAIL THIS COUPON TODAY!

Ford Division of FORD MOTOR COMPANY
3253 Schaefer Rd., Dearborn, Mich.

Please send me without charge or obligation, complete details on the new Ford Trucks for '52 and the five great Ford Truck Engines!

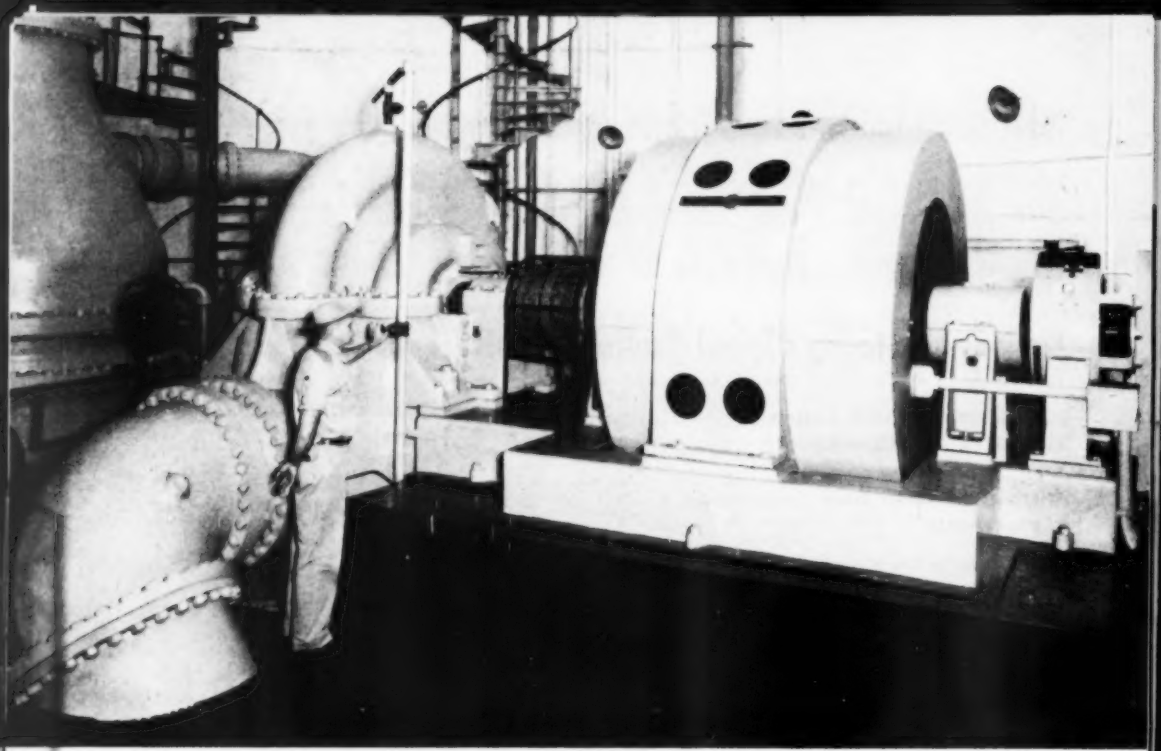
FULL LINE ☐ HEAVY-DUTY MODELS ☐
LIGHT MODELS ☐ EXTRA HEAVY-DUTY MODELS ☐

Name _____
(PLEASE PRINT PLAINLY)

Address _____

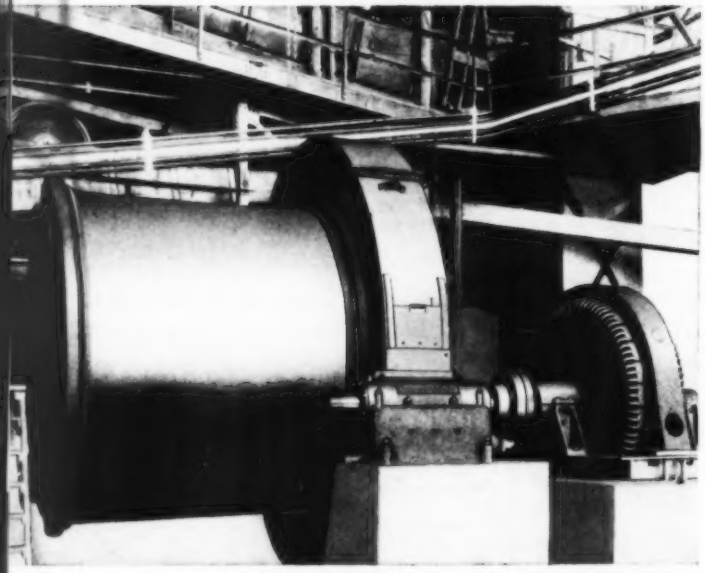
City _____ State _____
Check here if student ☐

FORD TRUCKS for '52 cost still less to run!

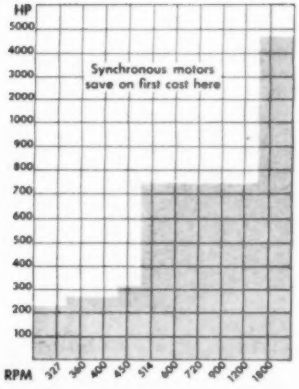


Savings in distribution equipment investment were made possible by selection of this General Electric 2500 hp synchronous motor for a municipal pumping station.

G-E Synchronous Motors

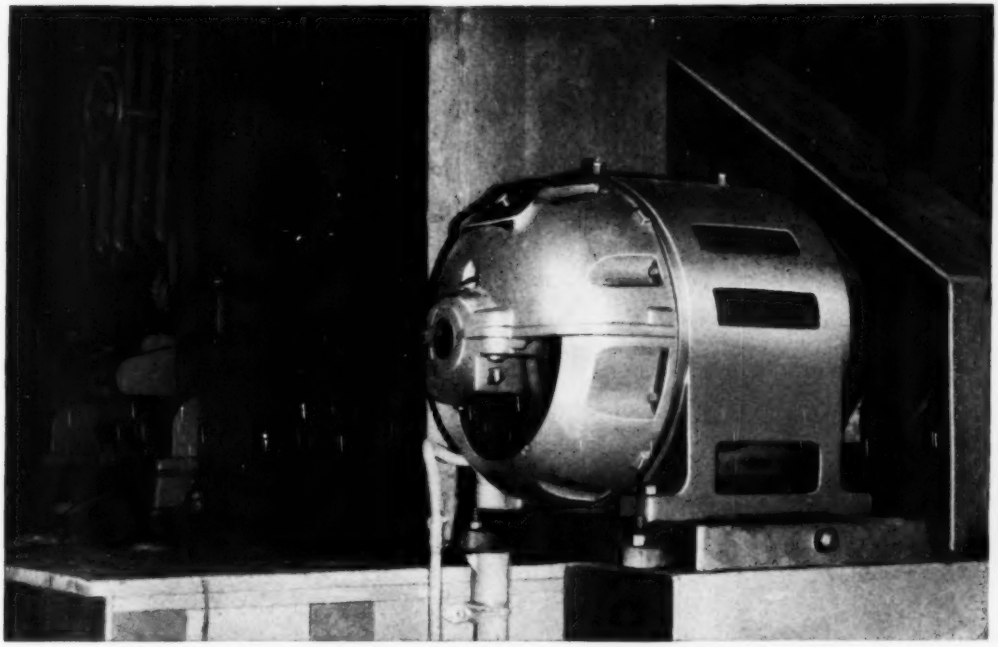


To meet the tough starting requirements of a ball mill, a mining company chose this G-E high-torque synchronous motor rated at 600 hp. Initial cost was low and the motor has given 20 years of dependable service.



Lower first cost of G-E synchronous motors is shown above. For applications in the white area, synchronous motors cost less than any other kind of motor. Calculations below show power savings on a typical 1000 hp, 514 rpm motor.

Gain in efficiency over other types of motors at same rating	**2.2%**
Hourly saving at power rate of $0.01 per/kwh	**$0.184**
Yearly saving (assuming constant operation)	**$1600.00**



Lower operating cost is the rule when General Electric Tri-Clad* synchronous motors are used with equipment such as this horizontal band re-saw, operating almost continuously at heavy loads.

Offer Double Savings

Lower First Costs, Lower Operating Costs Can Be Realized on Large, Constant-Speed Applications in Many Industries

Before you select a drive for a large equipment providing heavy and continuous service, be sure to investigate the economics of General Electric synchronous motors. On many applications such as pumps, compressors, fans, etc., outstanding savings are available.

LOWER FIRST COSTS

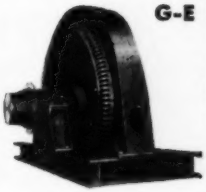
In most ratings where horsepower is equal to or greater than speed, the price tag on a synchronous motor with exciter and control is less than that of any other a-c motor with its control.

And, because a synchronous motor improves plant power factor, initial investment in distribution equipment frequently can be reduced. (The load which any new or expanded power system will carry is proportional to the plant's power factor.)

LOWER OPERATING COSTS

A synchronous motor usually has a higher full-load efficiency than any other type of motor, produces more work per dollar's worth of power consumed. Where loads are heavy and continuous, an advantage of from 0.5 to 3.0% in efficiency pays off.

Engineers with many years of field experience will tailor G-E synchronous motors and control to your job. Call in your General Electric representative—he'll be glad to discuss your particular application. And for more information on G-E synchronous motors, write for bulletins GEA-5332 (low-speed) or GEA-5426 (high-speed) to Section 770-26, *General Electric Company, Schenectady 5, N. Y.*



BE SURE TO SPECIFY G-E SYNCHRONOUS MOTORS

The result of more than 55 years experience in development, manufacture, and successful application, General Electric's line of synchronous motors is available in low speed and high speed types, engine-type and Tri-Clad* construction.

Numerous exclusive design and construction features promote long, dependable service. Get the full details!

Reg. trademark U.S. Pat. Off.

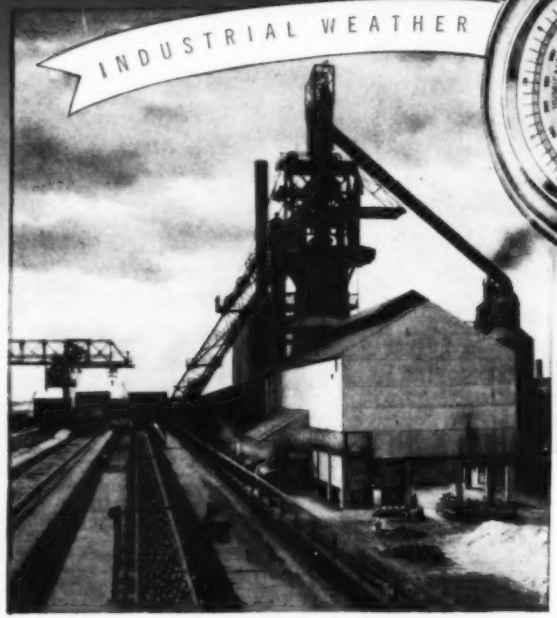
GENERAL ELECTRIC

770-26

Steel

BULWARK OF FREEDOM AND...

BAROMETER OF INDUSTRIAL WEATHER



Sheffield Blast Furnace—First to utilize Texas iron ore and coke from Oklahoma coal in a fully integrated at-home steel making operation.

Look at the activity of steel making and you look at a dependable business forecast.

West of the Mississippi and East of the Rockies, good business weather has long been reflected in the ever expanding facilities and activities of Sheffield Steel.

Within the last ten years, Sheffield's at-home steel making capacity has more than doubled. Sheffield Steel has expanded into a fully integrated at-home steel making operation from mining the raw materials to mill finished and fabricated steel products.

Look at the Sheffield customer list and you see the names of the leaders in manufacturing, agriculture, transportation, construction, oil, etc. With them, Sheffield Steel is proud to march in step with the greatly accelerated growth of what very aptly has been termed—the inner stockade of the garrison for freedom.

SHEFFIELD
STEEL
CORPORATION
HOUSTON KANSAS CITY
TULSA
SUBSIDIARY OF ARMCO STEEL CORPORATION

SHEFFIELD
MOLY-COP
COPPER-MOLYBDENUM ALLOY
Grinding Balls
USED and PROVED ALL AROUND THE WORLD

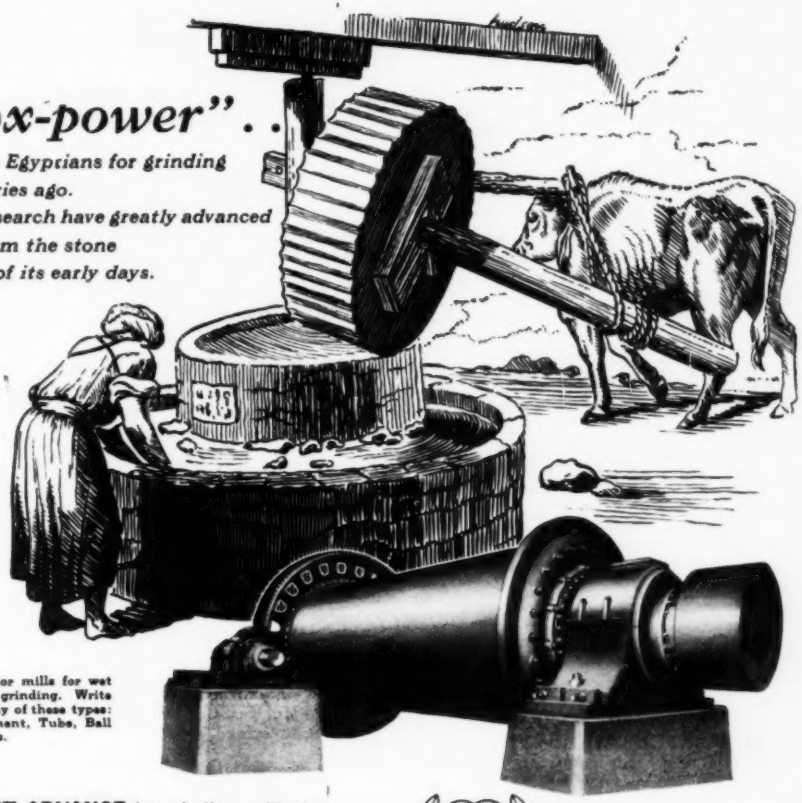
IRON AND STEEL *SCRAP* MEANS . . . . . .

MORE STEEL FOR AMERICA
More Money In Your Pocket!

GET YOURS OFF TO THE DEFENSE LINES NOW!

"one-ox-power" . .

was used by the Egyptians for grinding fine lime centuries ago. But time and research have greatly advanced the industry from the stone grinding wheel of its early days.



Traylor builds superior mills for wet or dry, coarse or fine grinding. Write for information on any of these types: Ball, Rod, Compartment, Tube, Ball Tube and Pebble Mills.

THE GREATEST ADVANCE in grinding mill design has come in the past 50 years. During that time, Traylor has been a major contributor to the development and construction of better grinding machinery to meet each varied and specialized need. Traylor has always worked closely with the men in the stone and cement industry . . . *first* learning what they needed, then building a machine "Traylor-made" for the job. Experience was, is and always shall be the deciding factor in the development and production of the most efficient grinding machinery. Traylor has experience . . . half a century of it.

OUR GOLDEN ANNIVERSARY YEAR
1902 1952

Reduction Crushers	
Gyratory Crushers	Jaw Crushers
Grinding Mills	Crushing Rolls
Rotary Kilns, Coolers, Dryers	Feeders

Traylor

ENGINEERING & MANUFACTURING CO.

466 MILL ST., ALLENTOWN, PA.

Sales Offices: New York • Chicago • Los Angeles
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

A TRAYLOR LEADS TO GREATER PROFITS

100% CAPACITY INCREASE with KUE-KEN* GYRACONE

3 FT. KUE-KEN GYRACONE was installed during a California plant modernization program replacing a set of 30" x 18" rolls. Capacity was increased 100% using less power.

Costly Daily Welding Eliminated

Welding on the rolls was required daily to maintain product size. The plant suffered from both lost production during the close-down plus the high daily welding costs. Installation of the Kue-Ken Gyracone eliminated this old style reduction method with its heavy maintenance expense and low capacity.

The Harder the Rock to be Reduced the Greater the Savings

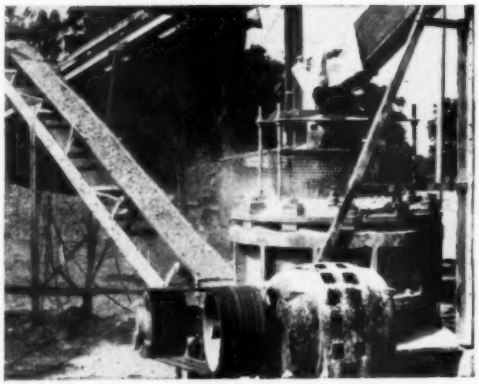
The savings alone will quickly pay for the cost of today's only completely newly designed crusher. This operator reports it was almost impossible to meet specifications on crushed rock with the rolls and now plenty of required small sizes come thru with his Kue-Ken Gyracone.

Less Wear with Modern Design

Crushing without rubbing gives Kue-Ken operators longer life to crushing faces. Rock is instantly gripped and crushed between the crushing faces without slipping and rubbing. Rock is not forced upwards grinding away the costly crushing faces as in ordinary gyratory crushers. Wear and power is reduced to the minimum, capacity is maximum.

SAVES ON INSTALLATION. Very low headroom required, 3 ft. size only 39" high. Fits easily into flow sheet. Takes choke feed, has no restricting spiders to reduce flow. Lowers horsepower for drive saves on power. Lighter weight saves on freight, foundation and installation costs. Powerful, compact yet with larger, stronger shafts which provide greater bearing area, for longer life. Completely pressure lubricated with filtered oil.

You Save with Kue-Ken



Note extremely low headroom . . . only 39" high. Takes choke feed. Fits easily into flow sheet. Product size is quickly and easily changed. This operator will profit from Kue-Ken's many savings with "Crushing without Rubbing."

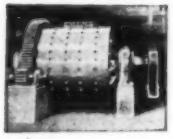
Kue-Ken oil seal keeps oil in and dirt out without rubbing against high speed, gritty surfaces. Lasts for years. Automatic release for both tramp iron and overload.

Get Complete Facts — Write for Bulletins

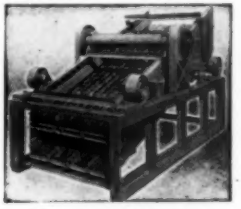
YOUR NEAREST WESTERN DEALER

LUND MACHINERY CO.—Salt Lake City, Utah; CLOSNER EQUIPMENT CO. — San Antonio, Texas; WASHINGTON MACHINERY & STORAGE CO.—Seattle, Wash.; CONSTRUCTION EQUIPMENT CO.—Spokane, Wash.; HEWITT-ROBINS INC., Pasadena, Calif.; EDWARD L. KROPP CO.—Portland, Ore.; CAL-ORE MACHINERY CO.—Medford, Ore.; ANAHUAC MACHINERY CO. — Mexico City, Mexico; UNIVERSAL EQUIPMENT CO. — Vancouver, B. C.

Kue-Ken Jaw Crushers



Rib-Cone Ball Mills



Overstrom Screens

*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

454 CHESTNUT ST. • OAKLAND 20, CALIFORNIA

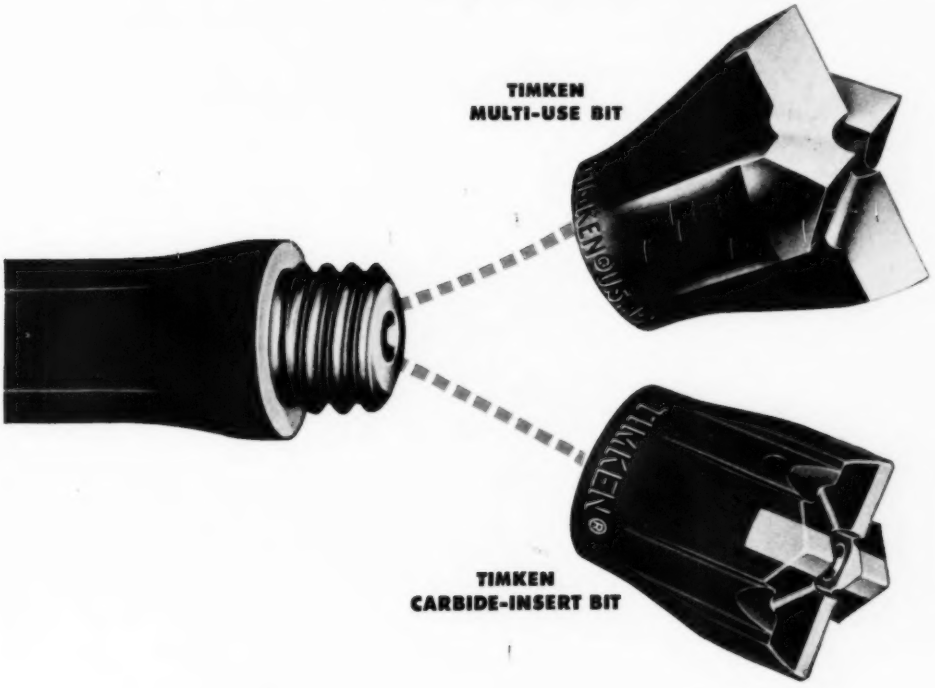
STRAUB MFG. CO.

Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
Kue-Ken Simplex Crushers	Concentrating Tables	Feeders
Kue-Ken Gyratory Crushers	Overhead Eccentric Crushers	Screenwheel Classifiers

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor Broad and Arch Streets, Philadelphia, Pennsylvania.

Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.

SWITCH TO THE BEST BIT FOR THE JOB, RIGHT ON THE JOB



WHEN there's variable ground in the same property you can save drilling time and whittle your labor costs by using interchangeable Timken® rock bits.

Use Timken carbide insert bits to get through hard ground in a hurry. Switch to Timken multi-use bits when you run into softer ground. Both types fit the same threaded drill steel.

With correct and controlled reconditioning, Timken multi-use bits give you the lowest cost per foot of hole when full increments of steel can be drilled.

Timken carbide insert bits are the most economical bits for hard and abrasive ground, and your best bet for maximum speed, constant-gauge holes, small diameter blast holes and very deep holes.

Team up the two of them and you'll always have the best answer to every drilling need right at your finger tips.

Timken carbide insert bits and multi-use bits are interchangeable in each thread series. And remember that both types of Timken bits have these three important advantages: 1) made from electric furnace Timken fine alloy steel, 2) threads are not subject to drilling impact because of the special shoulder union developed by the Timken Company, 3) quickly and easily removable.

Call upon the 20 years' experience of our Rock Bit Engineering Service for help in selecting the best bits for *your* job. Write The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

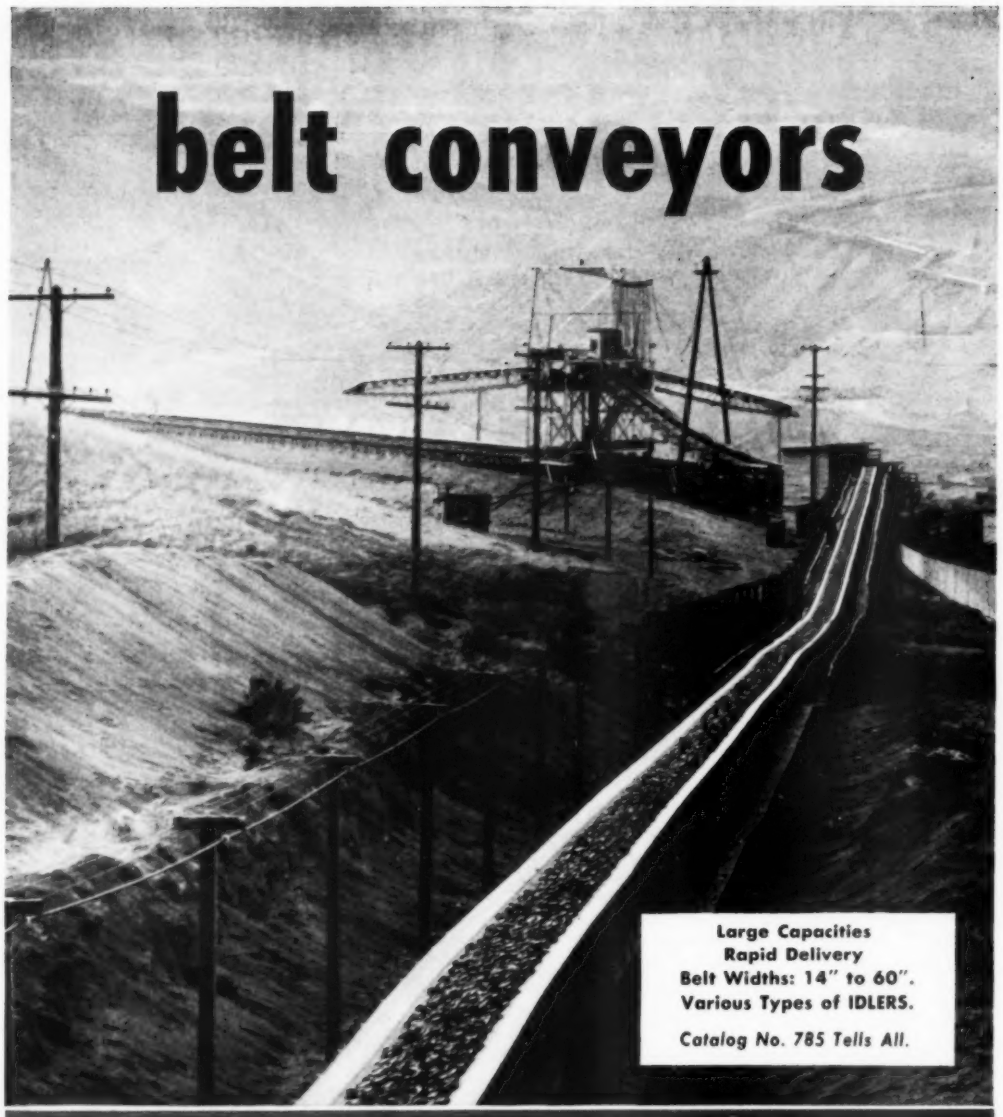
Timken threaded carbide insert rock bit

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit
. . . for <u>every</u> job

belt conveyors



Large Capacities
Rapid Delivery
Belt Widths: 14" to 60".
Various Types of IDLERS.

Catalog No. 785 Tells All.

THE **JEFFREY** MANUFACTURING COMPANY

917 North Fourth St., Columbus 16, Ohio

1877 75 1952

Baltimore 2 Boston 16 Cincinnati 2 Detroit 13 Houston 2 New York 7 St. Louis 1
Bradley, W. Va. Buffalo 2 Cleveland 13 Ferry Port, Pa. Jacksonville 2 Philadelphia 2 Salt Lake City 1
Birmingham 2 Chicago 1 Denver 2 Ravenna, Ky. Milwaukee 2 Pittsburgh 22

Jeffrey Mfg. Co. Ltd., Montreal, Canada — The Galion Iron Works & Mfg. Co., Galion and Bucyrus, Ohio
British Jeffrey-Diamond Ltd., Wakefield, England — Galion (Great Britain Ltd.), Wakefield, England
Jeffrey-Galion (Pty.) Ltd., Johannesburg, S. A. — The Ohio Malleable Iron Co., Columbus, Ohio
The Kilbourne & Jacobs Mfg. Co., Columbus, Ohio

PROGRESS IN EXPLOSIVES . . .

DYNAMITE, KING-SIZE

Did you know that dynamite comes in cartridges this big? Hercules pioneered in developing these larger cartridges which make for efficient blasting in large-scale coal stripping, open-pit mining, and quarrying operations.

These king-size cartridges range in diameter from 1¼ in. to 11 in. and weigh as much as 60 lbs. when filled. Spiral-wrapped in Hercules' own plants, they offer advantages in rigidity and smoothness. Other advantages: They are essentially their own shipping containers, are easier to handle and use, and can be stacked like cordwood.

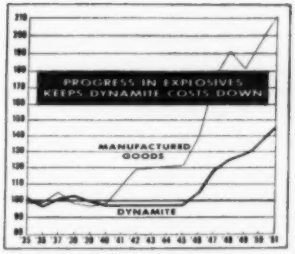


Chart shows relative stability of dynamite prices since 1935, as compared with prices of other manufactured goods. 1935-39 values=100.

HERCULES POWDER COMPANY

INCORPORATED

Explosives Department, 960 King St., Wilmington 99, Del.

X952-3

. . . with 1-SECOND GRAVITY DUMP

IT takes just one second to dump a full 6-yard load with Koehring heavy-duty Dumptor. Operator trips the body release lever and gravity instantly tilts the scoop-shaped body 70° . . . one second later the body is empty, and Dumptor is on its way back for another load. Because there's no waiting for slow-acting body hoists, Dumptor saves 15 to 25 seconds every dump. This adds up to important gains in yardage output. At 16 trips per hour on a 1,000′ haul, 20 seconds dumping time saved on every cycle gains 5.3 minutes more productive haul-time . . . adds 9% to hourly yardage output.

This is typical of Koehring Dumptor's basic principle . . . to reduce all non-productive time to the absolute minimum . . . and to increase work-time for more yards per hour, more profit per yard for you. Dumptor has many other cost-cutting advantages worth checking . . . see your Koehring distributor.

KOEHRING CO., Milwaukee 16, Wis.

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

CK120

KOEHRING HEAVY DUTY

KOEHRING DUMPTOR®

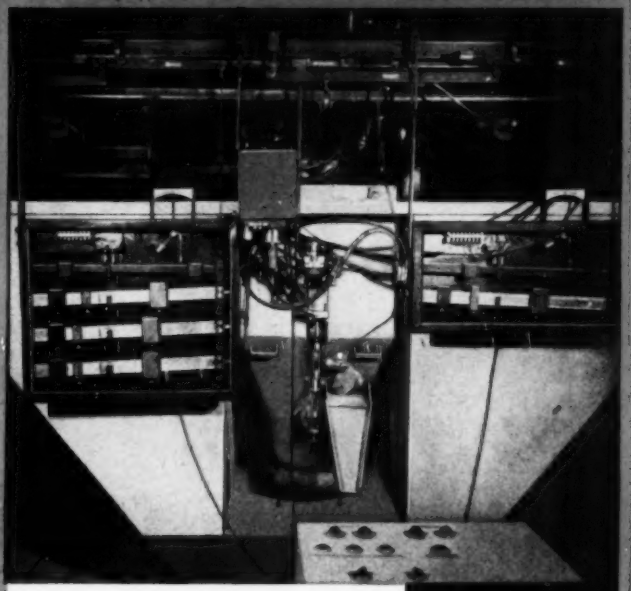
EXCAVATORS • CRANES • PAVERS • FINISHERS • CONSTRUCTION MIXERS • MUD-JACKS®

TON DUMPTOR STRENGTH PER TON OF PAYLOAD . . .
Layered steel-oak-steel bottom, rib-reinforced body, heavily-trussed main frame provide ample Dumptor strength to stand up to severe loading shocks

NO-TURN SHUTTLE HAUL
Koehring constant-mesh transmission gives Dumptor the same 3 fast speeds forward and reverse, eliminates slow turns at the loading unit, on narrow haul roads, and at dumping location.

NO BODY HOIST means no complicated mechanical hoists to slow up haul cycles, no costly hoist replacement parts with Koehring Dumptors. Gravity dump is always instantaneous, trouble-free . . . no mechanical parts to wear out.

CENTRAL CEMENT FEED with Johnson Concentric Batcher



● Central cement feed with Johnson Concentric Aggregate-Cement Batcher prevents "gumming", reduces dusting, pre-shrinks materials. All ingredients are intermingled as they flow through discharge.

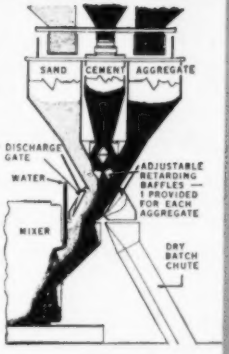
● Cement, concrete's most expensive ingredient, is weighed individually on precision-beam scale in a separate batcher hung within the aggregate hopper. Aggregates are weighed on accumulative dial scale, or on individual weigh-beam scales.

● Adjustable rate of discharge of each aggregate permits accurate ribbon-feeding . . . cement flow cuts off just ahead of final weight, prevents overshooting.

● Dual discharge is available for charging 2 stationary mixers, or 1 stationary mixer and a truck mixer or dry-batch truck.

● 2 to 5 cu. yd. sizes can be arranged for 2 to 4 aggregates, plus 1 or 2 types of cement . . . have fully-automatic, semi-automatic or manual controls. Let your Johnson distributor show you all the production advantages you will get with one of these patented Concentric Batchers in your plant.

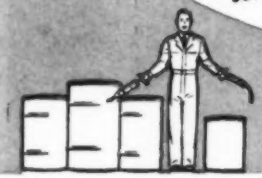
Automatic
AIR-RAM OPERATED
Finger-tip panel controls air rams on aggregate and cement fill valves and discharge openings . . . provides fully automatic operation . . . assures extreme accuracy at top batching speeds. Batcher also can be furnished with semi-automatic or manual controls.



C. S. JOHNSON COMPANY
(Koehring Subsidiary) CHAMPAIGN, ILLINOIS, U.S.A.
CONCRETE PLANTS • BINS • HOPPERS • ELEVATORS • SILOS • BUCKETS

CUT LUBRICATION COSTS with this ONE Multi-Purpose Grease!

"Using LITHOLINE® saves several greases and guns!"



Now you can do all lubricating jobs just as well *if not better* with one grease and one gun, using Sinclair LITHOLINE.

Using Sinclair LITHOLINE is the modern, fool-proof, money-saving way to handle all your lubrication jobs. LITHOLINE converts servicing time into production time.

ADVANTAGES OF LITHOLINE over specialized greases:

- SUPERIOR LUBRICATION AT EVERY POINT
- No danger of costly misapplication
- Quicker servicing, less downtime
- Smaller grease inventories
- Fewer dispensing units
- Less chance of contamination
- Less waste
- Simplified purchasing and distribution

Send for free folder describing demonstrations showing superiority of LITHOLINE. Write to your nearest Supplier of Sinclair Products or direct to Sinclair Refining Company, 600 Fifth Ave., New York 20, N. Y.

SINCLAIR LITHOLINE *for every lubrication job*

Points worth remembering about truck power

What's the percentage in trying to lug heavy loads with a truck that's just a loafer at heart? You need a high-powered hauler with plenty of brawn to walk away with the load and drag of rugged rock product hauling.

That's why Dodge "*Job-Rated*" trucks are *your* kind of trucks. Dodge engineers build 'em the way you want 'em—to fit your job to a "T" and to overpower a hefty payload with extra hustle and drive!

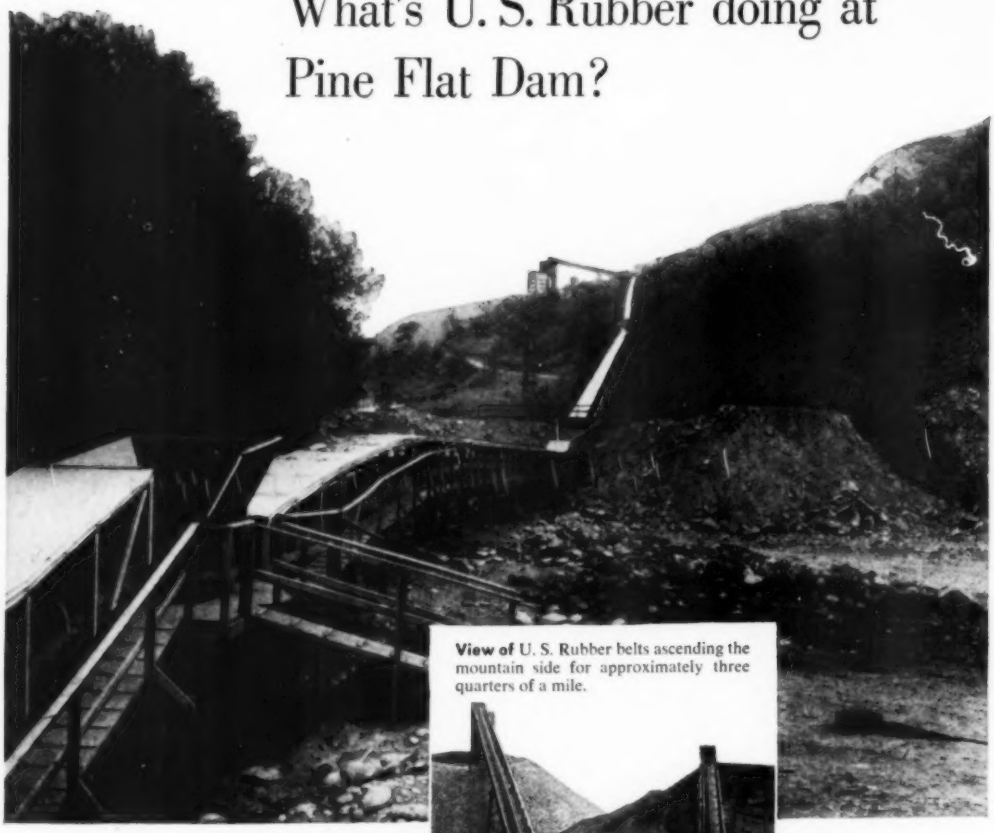
Under the hood there's a husky high-compression power plant with plenty of might to pull massive loads of rock, stone, gravel or sand over the miles. And Dodge scores high on long life and economy with extra values like exhaust valve seat inserts, chrome-plated top piston rings and twin carburetion and exhaust systems!

You can really pile on the payloads, too, thanks to the broad-beamed frame . . . stout, sturdy axles . . . better weight distribution.

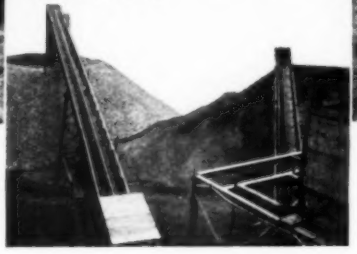
Why not check with your nearby Dodge dealer for the complete story on powerful Dodge "*Job-Rated*" trucks? Then put one to work on *your* job—and watch it take heavy loads in stride!

DODGE "Job-Rated" TRUCKS

What's U. S. Rubber doing at Pine Flat Dam?



View of U. S. Rubber belts ascending the mountain side for approximately three quarters of a mile.



Stockpiling coarse and fine material taken from the gravel pit.

At this great California installation, the finished aggregates and sand are carried by "U.S." conveyor belts from storage all the way to the batching plant high up on the site. The belting is 36" wide, climbs six flights for a total distance of 3700 feet. This 100% "U.S." belt installation is another example of 3-Way Engineering —"U.S." engineers worked with the conveyor equipment manufacturer and the contractor to produce this economical and efficient haulage system.

United States Rubber Company engineers have designed and built conveyor belts for a variety of installations, large and small. Let them advise you on any materials handling problems. Write to address below.

Here conveyors are stockpiling the finished washed-and-screened gravel.

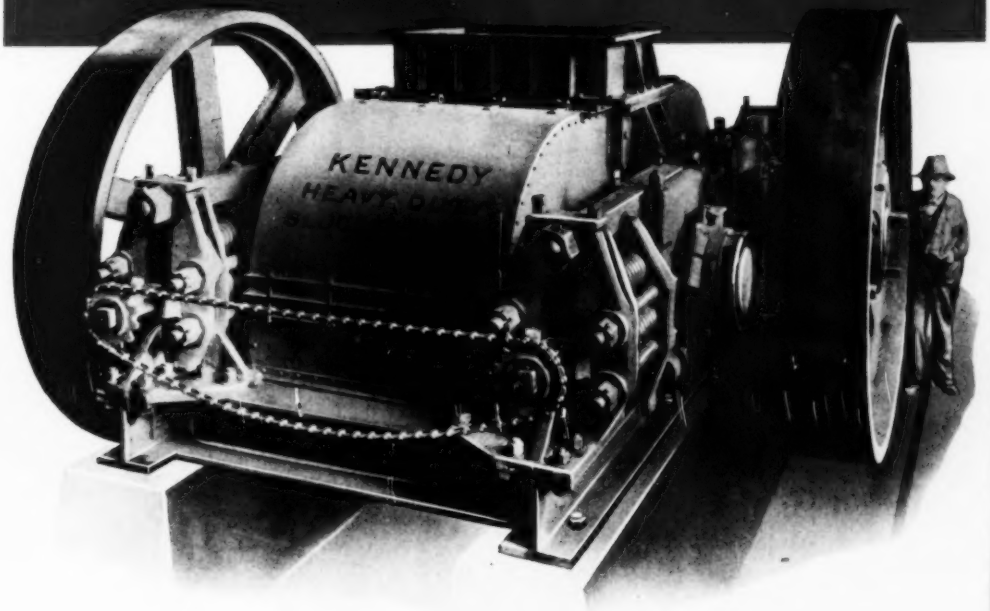
PRODUCT OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

KENNEDY SPECIAL PURPOSE SLUGGER ROLLS



FOR SWIFT, EFFICIENT CRUSHING OF GYPSUM, SHALE, LIMESTONE, SLAG, CHALK

Heavy-duty rolls, equipped with staggered knobs or sluggers. Teeth positioned so only a single tooth is in action at one time. This diminishes power required when operating at full capacity.

Driven by two flywheels made of open hearth steel, 4" thick on rim, up to 17" on the face. Rolls made of heavy, special steel that handles steam shovel loads of materials quickly, efficiently, consistently. Kinetic energy developed balances the load.

There's a long and satisfactory performance record in back of these precision-built rolls. If your plant reduces slag, shale, limestone, chalk, gypsum etc., Kennedy Slugger Rolls can help you do the job better, faster and at a lower cost per ton. Also built in a Single Slugger Roll model for special usages.

TYPE "A" SLUGGER ROLLS ARE "DIFFERENT" IN DESIGN, PERFORMANCE AND SERVICE

- **Machines can be adjusted while in operation to make 10", 2" or any intermediate size stone. No shut-down necessary for change-over**
- **Wreck-proof . . . not subject to breakage**
- **Sizes 36" x 30" up to 60" x 72"**

SEND FOR BULLETIN DESCRIBING KVS "ENGINEERED" ROLLS AND EQUIPMENT

IT COSTS LESS TO OWN THE BEST!

Kennedy-Van Saun
MANUFACTURING & ENGINEERING CORPORATION
TWO PARK AVE. NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

THIS CRUSHER CAN SAVE YOU TIME AND MONEY!

KENNEDY GEARLESS GYRATORY CRUSHERS ARE BUILT TO LAST LONGER, DELIVER LARGER ROCK TONNAGE

KVS crushers really L-A-S-T . . . they're built of materials that have stood every chemical and physical test needed to prove their strength and durability. In use, the World over, they deliver maximum out-put of rock products, year-after-year, under every conceivable operating condition.

Our records show that no roller bearing has ever worn out . . . that eccentrics wear indefinitely . . . a report from one large user states that the Kennedy crusher has not been re-babbitted in 23 years . . . another repeat customer writes: "Kennedy crushers take more abuse than the law allows . . . they are the best crushers our company has bought in the 64 years we have been in business." We can't think of a better testimonial of quality!

Built in a wide variety of sizes and capacities, there's a Kennedy primary or secondary crusher that will help your plant increase production, reduce operating costs and hold maintenance to a minimum. Let our engineering department show you how KVS machinery and equipment can save you time and money.

SEND FOR BULLETINS DESCRIBING ALL TYPES OF KVS FAMOUS CRUSHERS

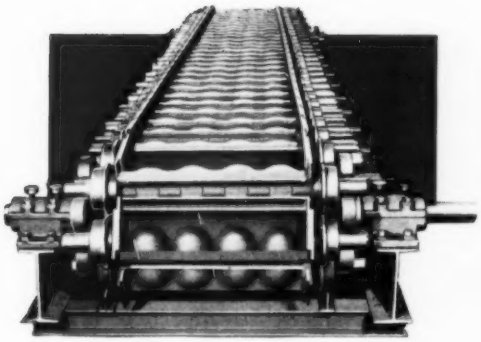
OUTSTANDING FEATURES OF KVS GEARLESS GYRATORY CRUSHERS

- Synchronous, air cooled motor built into pulley assembly.
- Forced-Feed lubrication . . . costs less to operate.
- Greater capacity in all models with less use of power.
- Frictionless . . . Gearless . . . Smooth, quiet action.
- No gears to waste power. Power applied only for crushing.
- All moving parts supported on self-aligning roller bearings.
- KVS oiling system pumps four barrels of oil per hour through bearings without waste. Crushers have run for years without renewing eccentric.

IT COSTS LESS TO OWN THE BEST!

Kennedy-Van Saun
MANUFACTURING & ENGINEERING CORPORATION
TWO PARK AVE., NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

KENNEDY BUILDS EQUIPMENT THAT CAN MOVE MOUNTAINS!



ROCK FEEDERS FOR HANDLING HEAVY LOADS

Built with leak-proof overlapping pans for handling heavy loads direct from the steam shovel. Stone or Ore . . . dumped from cars . . . fed into the crusher at any desired rate of tonnage, regulating efficiency of entire plant.

Carrier head and tail shaft equipped with special sprockets, keyed to shaft and held in position for perfect alignment. Capacity controlled by operator . . . no bottlenecks due to underloading or overloading.

Built in any size to meet your specifications. Optional length, width and operating speed. Can be furnished with reversible operation . . . can be operated horizontally or at any angle up to 10 degree inclination. The sturdiest, most versatile heavy-duty rock feeder ever built.

APRON FEEDERS, DESIGNED TO HANDLE A WIDE VARIETY OF RAW MATERIALS

These versatile feeders are available in many different widths and lengths. KVS engineers have provided exclusive features that make these special material handling loaders outstanding.

Frames are structural steel for long-lasting, rigid support . . . leakproof pans, spur drive and automatic scale for weighing materials being handled. Optional equipment includes chain and sprocket drive for connecting to gear motor or reducer for connecting to any standard motor.

For use under clinker cooler to handle clinker from kiln or lime from the deheater. A versatile piece of feeding equipment that serves many purposes.

SEND FOR SPECIAL BULLETIN DESCRIBING THE VARIED TYPES OF KVS ROCK AND APRON FEEDERS

IT COSTS LESS TO OWN THE BEST!

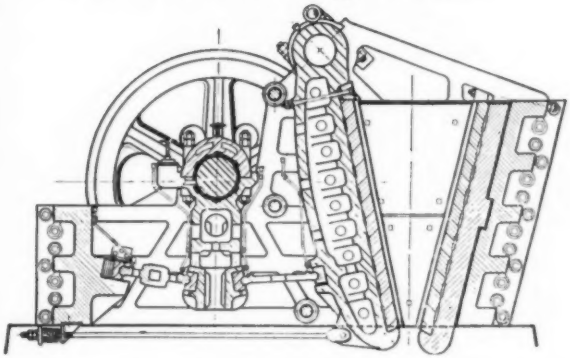
Kennedy-Van Saun

MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVE., NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

SWING JAW CRUSHERS

that can "take it" as well as "give it"!



KENNEDY 4-SECTION SPLIT FRAMES OF HERCULITE OR OPEN HEARTH STEEL

KENNEDY Swing Jaw Crushers are built to stand the shock and jar of reducing "Hard-to-crush" rock and ore without strain . . . to go on producing maximum output of rock products without time off for adjustment and repair.

Swing jaws are reversible, end-to-end or side-to-side, for DOUBLE the amount of service obtained from ordinary crushers without this feature. Jaw plates cast in one piece; swing jaw shafts cast integral with swing jaws to eliminate excessive wear encountered in other models.

In use, the World over, these rugged crushers with the stamina of a heavy tank, are built to "Take It" as well as "Give It" and present ever-ready proof that "It Costs Less To Own The Best" when you specify KVS.

CONSIDER THESE EXCLUSIVE FEATURES FOUND ONLY IN KVS SWING JAW CRUSHERS

- Crusher frames built of Herculite or open hearth Steel Tensile strength, 60,000 lbs per Sq In.
- Counter-balanced fly wheel for lifting pitman at bottom of stroke. Hoisting engine or Jacks not needed to start machine.
- 4-sectional split frame, bolted in center, bolts thrown into tension if strain develops. A superior method of construction compared to machines joined at corners.
- Built in a wide range of sizes to suit every crushing requirement.

SEND FOR BULLETIN DESCRIBING ALL TYPES OF KVS CRUSHERS!

IT COSTS LESS TO OWN THE BEST!

Kennedy-Van Saun

MANUFACTURING & ENGINEERING CORPORATION

TWO PARK AVE., NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

It'll soon be 21!

For 20 straight years Internationals have been first in heavy-duty truck sales.

It will soon be 21. Another year will be added to International Trucks' heavy-duty leadership because truck operators who know hauling costs will *continue* to prefer the trucks that give them lower operating and maintenance costs, longer truck life.

If you are interested in these money-saving advantages, why not see your International Truck Dealer or Branch about the truck engineered for your job?

INTERNATIONAL HARVESTER COMPANY • CHICAGO

Check these exclusive advantages of Internationals:

- All-truck engines—exclusively for truck work—built in the world's largest truck engine plant.
- The "roomiest, most comfortable cab on the road"—the Comfo-Vision Cab designed by drivers for drivers.
- Super-steering system—more positive control, easier handling and 37° turning angle.
- Traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- 115 basic models . . . everything from ½-ton pickups to 90,000 lb. GVW off-highway models.
- America's largest exclusive truck service organization.

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power. . . Refrigerators and Freezers

INTERNATIONAL TRUCKS

More than One Million Now on the Road

Model LF-194, 145 inch wheelbase, 9x7 ft. dump body, 38,000 lbs. GVW.

Raymond VERTICAL MILL

for ECONOMICAL PRODUCTION *of* EXTREME HIGH FINENESS MATERIALS

10 TO 15 MICRONS RANGE OF THE VERTICAL MILL

20 TO 325 MESH RANGE OF THE STANDARD MILL

The Raymond Vertical Mill has proved to be one of the important developments in the fine grinding field for the production of powdered materials in the lower micron sizes.

It operates in a fineness range beyond that of ordinary pulverizers. Many products can be reduced with this mill to 95% to 99% finer than 15 to 20 microns. Other softer materials of smaller crystalline structure can be ground to finenesses as high as 95% to 99% finer than 5 to 10 microns.

For pulverizing talc, clays, graphite, expanded vermiculite, earth colors, and similar soft materials, the Vertical Mill offers important advantages. Write for details and describe your problem.

Write for New Bulletin No. 70 for detailed information on the Vertical Mill

COMBUSTION ENGINEERING – SUPERHEATER, INC.

1321 North Branch Street
Chicago 22, Illinois

Raymond
PULVERIZER DIVISION

Sales Offices in Principal Cities

Built to Resist Tube Swelling

...and to withstand toughest use

TUBE SECURELY LOCKED BY SPECIAL STAINLESS STEEL INNER WIRE BRAID

Illustration shows, in magnified detail, the exclusive protection feature—special stainless steel inner wire braid—you get only with CONCORD #20 STEAM HOSE. Promotes extra safety and longer hose life—fights tube swelling.

This famous BWH hose features a structural "exclusive" that's there for one purpose: *to fight tube swelling under continuous high pressure.*

Protection found only in CONCORD #20 STEAM HOSE, this consists of a tough inner lining of stainless steel wire braid. This helps assure retention of original inside hose diameter . . . acts against swelling and constriction of tube . . . promotes full flow of steam and easy recoupling in the field when necessary.

Other construction features of CONCORD #20 include: two or three braids (depending on size) of alternate high tensile steel wire and rubber layers firmly bonded over outside of tube . . . to provide maximum burst protection and safety; asbestos braid gives positive cover adhesion and serves as cover insulator; finally, the rugged, abrasion-resistant cover is built to withstand severest abuse.

FLEXIBLE . . . TOUGH . . . DEPENDABLE, that's CONCORD #20 STEAM HOSE. Put it to work for you now, get in touch with your nearby BWH distributor today.

BWH
DEPENDABLE RUGGEDNESS

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER CO.

Warehouse Stock: 111 N. Canal St., Chicago, Ill. Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. · P. O. BOX 1071, BOSTON 3, MASS., U. S. A.

NO. 2 OF A SERIES
ON HOW TO

Stretch a MULTIWALL Paper Bag

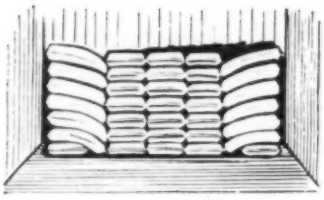
It is just good business to get the best possible use from your multiwalls. Here is one way to do it . . .

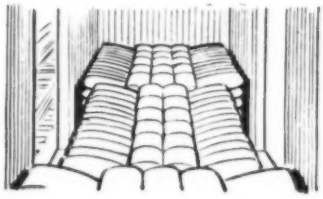
PROPER CAR LOADING

PREPARATION IS IMPORTANT

Cars should be clean, dry, and free from protruding nails or other projections. Remove all dirt, dust, rocks and grit from floor and walls. Remove loose nails and cover loose bolts with cardboard or several thicknesses of car liner. (Picture shows how to use straight-edge board to locate protruding nails, etc.)

Cover floor with good grade of car liner and put at least three thicknesses on door edges. Line walls, too, if they are in bad condition. Use asphalt-laminated paper to seal door cracks against dirt, rain, snow and cinders.





FOLLOW THESE LOADING RULES:

1 The car should be loaded so that the filled bags will not come in contact with side doors.

a. Use a good grade of dunnage in the doorway or steel strapping covered with corrugated board.

b. Follow proper loading patterns. (See illustrations.)

c. Use retaining strips of special Scotch tape applied across the load, or steel retaining straps covered by one thickness of corrugated board.

2 Bags should be loaded tightly, solidly and flat, to minimize shifting in transit.

3 Balance the load so there will not be more weight on one end or side than on the other end or side.

There are, in general, three different methods of loading—crosswise, brickwall and lengthwise. The crosswise method is generally considered to be the most acceptable.

Loading in car doorways should be done in such a manner that this part of the load acts as a keystone between the loads in the ends of the car. (See illustration.)

Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

• • •

If you need cotton or burlap bags also, Bemis is your best source.

Bemis

BEMIS BRO. BAG COMPANY

St. Louis 2, Missouri

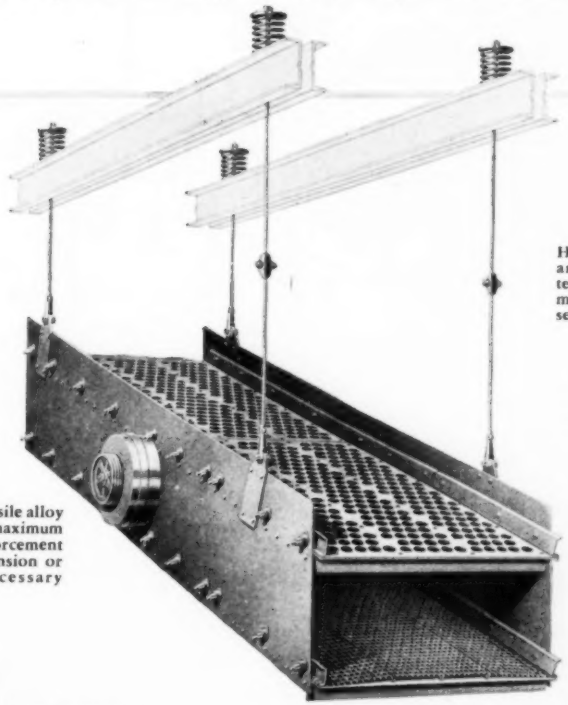
For accurate sizing...
For thorough rinsing...
For rapid dewatering...

the BETTER WAY is with CA

Concentric Action Vibrating Screens

No matter what your screening requirements — Link-Belt CA Vibrating Screens offer top efficiency. Self-aligning vibrator mechanism imparts a smooth, positive, circular motion to every square inch of every deck. Lively tumbling action gives each particle maximum opportunity for sizing, washing or drainage.

There's a standard size CA for almost every job — 3 x 8 to 6 x 16 ft. . . . single, double and triple deck . . . suspension or support mounted. Remember, when it comes to materials handling, profit-wise operators come to Link-Belt.



Two-bearing vibrator has constant bearing loads — no shock from impact of feed.

Unbalanced weights easily adjusted to amplitude of highest efficiency.

Screen box of high tensile alloy steel plate provides maximum strength. Solid reinforcement at vibrator and suspension or support insures necessary rigidity.

Husky roller bearings are completely protected from dust and moisture by labyrinth seals, steel housing.

Centrifugally-actuated, unbalanced weights eliminate excessive vibration in accelerating and decelerating.

Screen cloth is securely tensioned and clamped over rubber supports, can be quickly changed.

WRITE FOR BOOK 2354 for complete layout data

LINK-BELT

VIBRATING SCREENS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa.) Offices in Principal cities. 12.425

How Bucyrus-Erie Drills Give You

Extra

DRILLING FOOTAGE ...EVERY SHIFT

FAST-working Bucyrus-Erie Blast Hole Drills deliver P-O-W-E-R at the point of impact that pushes holes down fast. Here's what makes that power add up.

Rapid, Even Drilling Rhythm Bucyrus-Erie drills travel at the rate of between 55 and 58 evenly spaced strokes per minute. This fast, even stroke coupled with the sharp hit-and-snap-up action provided by the derrick head shock absorbers shatters rock in a hurry.

Long Stroke Bucyrus-Erie drills match smooth drilling motion with a long stroke. (46-in. maximum for 42-T, 44-in. for 29-T, 40-in. for 27-T, 36-in. for 22-T.) It's this long stroke that multiplies the impact of the tool string.

Tool Strings of Maximum Weight Bucyrus-Erie drills can handle extra tool strings because these rigs combine strong, rigid steel construction with plentiful reserve power. Add heavy tool strings to fast, sharp action and a long stroke and you have the answer to Bucyrus-Erie's leadership in high-speed, low-cost hole footage.

126852

There are many additional reasons why Bucyrus-Erie's are the Big Four of blast hole drilling. Write for full details.

22-T	**5⅝" to 6⅝"**	**holes**
27-T	**6" to 6⅝"**	**holes**
29-T	**6" to 9"**	**holes**
42-T	**9" to 12"**	**holes**

Diesel or electric power is available for all machines, gasoline for all except 42-T.

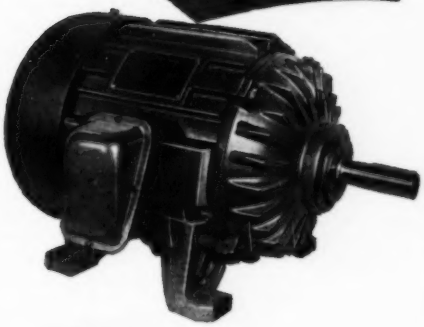
BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

ALLIS-CHALMERS

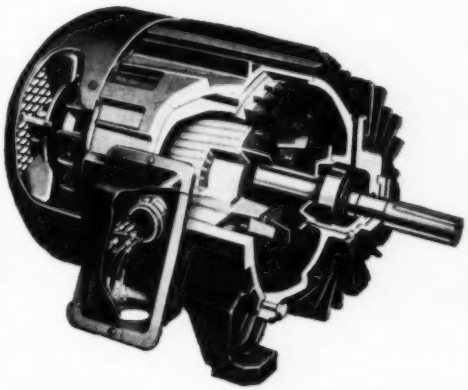
Totally-Enclosed Fan-Cooled MOTORS

Look Outside



Greatly increased radiating area means greater cooling efficiency. More important, cooling efficiency stays high, regardless of operating conditions. There are no enclosed external air passages to clog and cause overheating. If oily dirt sticks, just wipe or blow it off. No matter how bad operating conditions are, this motor can be easily kept clean and cool running. Electrical parts are protected against corrosive atmospheres by cast iron yokes and end housings.

Look Inside



Double-shielded, heavy-duty ball bearings require no maintenance in ordinary service under most conditions. However, they can be lubricated without disassembly if required. Double shielding prevents over-lubrication, leading cause of bearing trouble. Rotating seals, where shaft extends through housings, keep dirt and moisture out of bearing chambers. Die cast rotor and interphase insulation are further assurance of long life and low maintenance.

See WHY THIS IS YOUR BEST MOTOR BUY

HERE IS A MOTOR that is different from conventional TEFC motors; built with an entirely different cooling system that gives you big savings in lower maintenance, more continuous service and less trouble in the toughest locations. Clogging can easily be prevented in the Allis-Chalmers Type APZ TEFC motor since areas that might collect dirt are exposed and easy to clean.

GET DETAILS NOW — *Ask your nearby Allis-Chalmers Authorized Distributor or District Office for more complete information on this high performance TEFC motor. Or write direct to Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B7225.* A-3578

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

ALLIS-CHALMERS

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

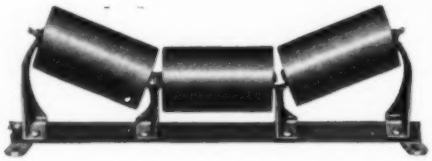
a big "hit" below the belt!

Nearly everyone realizes the advantages of belt conveyors for low-cost transportation of bulk materials. But what goes on below the belt is, perhaps, too often taken for granted. Certainly, the belt idler, more than any other piece of equipment, is responsible for the low cost of belt conveying per ton of material handled.

That's why Rex® Idlers are so often specified. Rex has been the leader in idler design and construction for over 25 years and sets the standard that others are working toward.

An idler must "keep rolling." If it freezes up, the belt will quickly wear through the roll, leaving sharp edges to cut your belt. The most common causes of idler "freeze-ups" are grit and dirt entering the bearings and build-up of material underneath the roll. To keep your Rex Idlers rolling, all you have to do is *keep your deck plates clean.* This will prevent material from building up on the rolls. The Rex Triple Labyrinth Grease Seal does the rest. The grease is there only to keep out dirt and grit, not to lubricate. With the special Rex seal design, the grease stays in . . . the dust stays out.

Remember, your idlers are the backbone of your entire belt conveyor. Don't gamble. Insist on Rex and be sure of a trouble-free performance year after year. For all the facts call your nearest Chain Belt Field Sales Engineer or write for Bulletin 51-81. Chain Belt Company, 4604 W. Greenfield Avenue, Milwaukee 1, Wisconsin.



For over 25 years Rex Idlers have been recognized as leaders in the field of idler design. New Rex again leads the way with the flexible grease line. Note the accessible, protected location of the fitting. Extension of tubing to far side can easily be done in the field without special tools. Flexible sections hug the inside of the base.

CHAIN BELT REX COMPANY ®

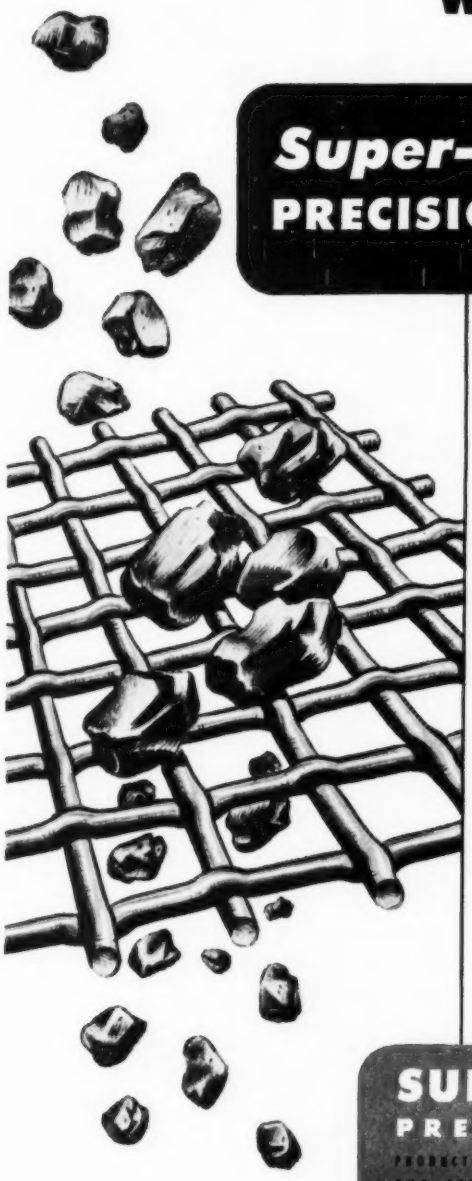
Chain Belt COMPANY OF MILWAUKEE

Atlanta • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland
Dallas • Denver • Detroit • El Paso • Houston • Indianapolis • Jacksonville
Kansas City • Los Angeles • Louisville • Midland, Texas • Milwaukee • Minneapolis
New York • Philadelphia • Pittsburgh • Portland, Oregon • Springfield,
Mass. • St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa • Worcester

Distributors located in principal cities in the United States and abroad

STEP UP PRODUCTION SCHEDULES WITH

Super-Tempered PRECISION SCREENS



Today's intensified production puts extra strain on equipment...makes doubly important the long-wearing qualities you get from Super-Tempered Precision Screens.

More and more, users are discovering that the extra durability and sustained reliability of Super-Tempered Screens offset by far their slightly higher first cost.

There are two good reasons why Super-Tempered Precision Screens give long-lasting resistance to abrasion and fatigue...stay tight under the most punishing vibration. First: because they're made of a special, tough super-tempered steel rolled and heat-treated in our own plants. Second: because they're crimped and woven on powerful hydraulic machines of our own exclusive design.

Find out how Super-Tempered Precision Screens can pay off for you in less downtime; longer, more accurate and dependable service; greater tonnage output at lower cost.

For additional information write or phone our nearest sales office.

THE COLORADO FUEL & IRON CORPORATION, Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION, Oakland, California
WICKWIRE SPENCER STEEL DIVISION, Atlanta • Boston • Buffalo • Chicago
Detroit • New York • Philadelphia

SUPER-TEMPERED
PRECISION SCREENS CF&I
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

VOL. 44 APRIL 1952 No. 10

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals. Copyright 1952 by Complete Service Publishing Co., 431 S. Dearborn Street, Chicago 5, Illinois. PIT AND QUARRY magazine was founded by H. W. Baumgartner, October, 1916.

JAMES E. MONTGOMERY
President

RAY L. SMITH, JR.
Vice-President and
Director of Circulation

WILLIAM A. WILSON
Vice-President

W. T. KLUSSMAN
Secretary-Treasurer

WALTER E. TRAUFFER
Editor

WILLIAM M. AVERY
Senior Field Editor

HARRY F. UTLEY
Pacific Coast Editor

M. E. ANSEL
Assistant Editor

E. E. GREEN
Research Editor

ROGER R. NOLAN
Field Editor

FRANK J. CORNYN
Production Manager

•

CHICAGO BUSINESS OFFICE
431 S. Dearborn Street
Chicago 5, Illinois
Telephone HArrison 7-8558

GEORGE P. GRANT
Mid-West Advertising Manager

EARL C. KAYE
Representative

•

NEW YORK OFFICE
Room 906, 370 Lexington Avenue
New York 17, New York
Tel. MUrray Hill 5-4438 and 5-4714

W. A. WILSON
Vice-President
Eastern Advertising Manager

JOHN R. DUBLE
Assistant

•

CLEVELAND OFFICE
436 The Arcade
Cleveland 14, Ohio
Telephone CHerry 1-4432

CHARLES H. BUSSMANN
Central Advertising Manager

•

WESTERN OFFICES
820 N. Magnolia Avenue
Whittier, California
HARRY F. UTLEY

Representatives

McDONALD-THOMPSON

Los Angeles 5, California
3727 W. 6th Street
EDWARD T. THOMPSON

San Francisco, California
625 Market Street
ROY M. McDONALD

Seattle 1, Washington
Terminal Sales Building
T. HARRY ABNEY

Dallas 11, Texas
1118 Odeans Drive
R. C. WIPPERMAN

ABC

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

PIT AND QUARRY

In this issue

Editorials ... 70
News of the Industry ... 73
Thirty Years Ago in Pit and Quarry ... 81
Erie Sand and Gravel Co. Vessel Uses Radar ... 82
El Salvador's First Cement Plant Nears Completion ... 83
A.I.M.E. Industrial Minerals Division Features Sulphur at New York Meeting ... 86
Tax Liability in the Sale of a Business ... 89
Washington News Letter ... 90
Screenings ... 92
35th N.C.S.A. Convention Breaks All Earlier Attendance Records ... 94
Report on Current Labor Developments ... 108
Factors Affecting Flotation—II ... 109
Fundamentals of Gypsum Calcination ... 113

The Concrete Manufacturer

Editorial ... 151
News of the Industry ... 153
Canadian Block Association Meets in Windsor ... 156
Successful Convention of Concrete Institute at Cincinnati ... 158
Block Men Name Al Streblow President of N.C.M.A. at New York Convention ... 162
Waylite Company Unveils New Plant at Bethlehem for N.C.M.A. Officials ... 167
New Sakrete Plant Supplies Eastern and New England States ... 169
American Concrete Pipe Association Holds 44th Annual Convention at Chicago ... 171
Pallet Conveyor, Improved Lift-Truck Speed Output at California Plant ... 174

More Information Please ... 115
Obituaries ... 123
New Machinery ... 124
Personal Mention ... 128
Trade Notes ... 129
Legal Decisions ... 138
Traffic News ... 144
Index to Advertisers ... 222

To subscribers: Date on lower right-hand corner of wrapper indicates issue with which your subscription expires. When requesting change of address, kindly send old as well as new address.

Let B&W pour WEAR-RESISTANCE into YOUR CEMENT MILL EQUIPMENT

Products of B&W Engineering for Economy

. . . CAST TO LAST where abrasion is worst

As vital parts of crushers, grinders, ball mills, kilns, chutes, coolers, and other cement mill equipment, B&W chilled iron and alloy steel castings are demonstrating outstanding ability to give superlative service under severest abrasive conditions. Operating in about every kind of tough service, they are helping to keep production up by reducing costly, time-consuming shutdowns for repairs and replacements.

From its own modern foundries, B&W can supply castings in practically any analysis, weight, and shape required for cement mill applications. Our experience in helping others combat wear with B&W alloy castings is available to you on new and special requirements.

THE BABCOCK & WILCOX CO.
General Offices: 85 Liberty St., New York 6, N. Y.
Works: Alliance and Barberton, O., Augusta, Ga.

BABCOCK & WILCOX

B&W

5-92

editorial

Explain Your Business

IF business is to be saved, it must be explained. That, says the Chamber of Commerce of the United States, is the theory behind a vast new educational program which is going on in America. The theory is that the only salvation of the free, competitive enterprise system lies in imparting to the public an understanding of the businessman's problems, his goals, and his contributions to the general welfare. The program is called "Explaining Your Business," and it is sponsored by the Chamber. Its purpose is to teach individual businessmen how to explain their own businesses to their employees in terms the employees can readily understand.

"This technique," says the Chamber, "has been demonstrated to have two big advantages:

"1. Employees have a natural interest in their own company; they are willing and often anxious to hear the company's story; they are familiar with and usually have confidence at the outset in at least part of the company's operations; by understanding their own company better they begin to appreciate the business system generally.

"2. Once employees are made to recognize the merits of free enterprise, the job of public education is largely accomplished."

AFTER conducting several one-day conferences in various parts of the country to interest businessmen in the program, the Chamber recently held a week-long seminar at which 55 business leaders from 16 states tackled the problem. Presented for discussion were the results of a study of 10,000 employees in seven different companies which made it apparent that many of them had little understanding of the reasons for our high standard of living or of the fact that our free enterprise system must be maintained in order to keep it.

The National Chamber feels that economic education is not the entire answer to developing a better understanding of American business, that the element of human relations contributes most to compatibility between employees and employers. One way to strengthen this relationship, it is stated, is to satisfy the basic needs for opportunity, recognition, participation, and security.

One speaker at the seminar said that employees in this country want a close identification with the concerns they work for and with the reputation of the products they make; and yet, he said, a recent poll showed that about 50 percent of American employees were unhappy and disinterested in their jobs, while 90 percent of the executives found pleasure in their work. Higher wages and explanations of company policy mean little to those who find themselves frustrated as human beings. A business must not be explained strictly in terms of management's interests, but as a common enterprise in which both will gain when the business prospers.

THE Chamber advocates methods of telling the employers' story through such devices as employee meetings, films, letters, house organs, annual reports, and bulletin boards. It was pointed out by one speaker that a house organ is an ideal medium to carry on an exchange of information and confidence with employees and he credited it largely for the fact that his company has not had a strike in 18 years.

Another employer of only 19 persons told how profits from his business rose sharply within the two years after he had developed an employees' communications program. Learning that some of the employees felt that he was not interested in them as persons but only in the work they produced, and that many lacked knowledge of important phases of the business, he developed other information which enabled him to begin a sensible program. He began holding regular informal meetings at which all were free to comment. The net result was a noticeable improvement in employees morale and a marked increase in business and profits, to the benefit of both the employer and the employees.

It is perhaps not possible for all industrial concerns to follow any of the plans mentioned above, but some of the principles involved can be applied to every business. Perhaps most important is letting the employees know that the heads of the company are interested in them as persons, and this can be done in many ways.

Improving Industrial Productivity

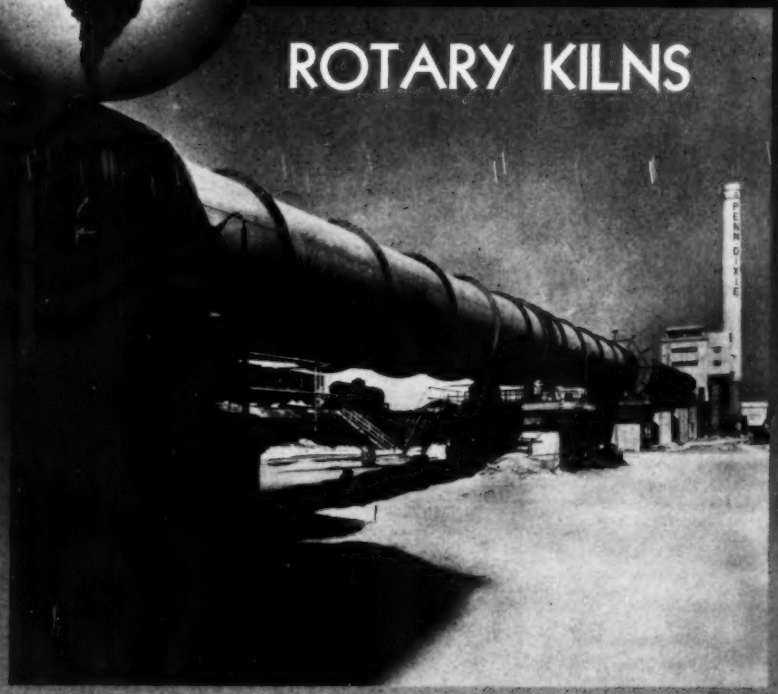
THERE is much justified criticism of the many activities which are constantly being added to the functions of the Federal Government and which all add to the tax burden. Occasionally, however, a really worthwhile addition is made which performs a service that can not be rendered effectively by any private organization. In this category is the national "Clearing House for Beneficial Suggestions" which was recently announced by Secretary of Commerce Charles Sawyer. Fashioned after the War Production Board's so-called "Brain Bank" of World War II, this clearing house is designed for the pooling and interchange of ideas to benefit the nation's current defense production efforts.

MANY companies have their own clearing houses for suggestions from employees for improving productivity, bettering the product, lowering production costs, increasing safety, etc., and there are many trade associations which perform similar functions in varying degrees for their industries. The companies affected, however, are only a minority, and there is a real need for a national clearing house to serve all industry. According to Secretary Sawyer, manufacturers during World War II sent in ideas of all kinds evolved in their shops to a comparable clearing house. The ideas that were most practical and had the widest applicability were published and circulated throughout all industry. The result, he said, was a pooling and interchange of productivity ideas which were often little things in themselves, but cumulatively had a tremendous effect in speeding up our industrial production and making it safer and more efficient.

Walter E. Trauffer

SMIDTH

ROTARY KILNS

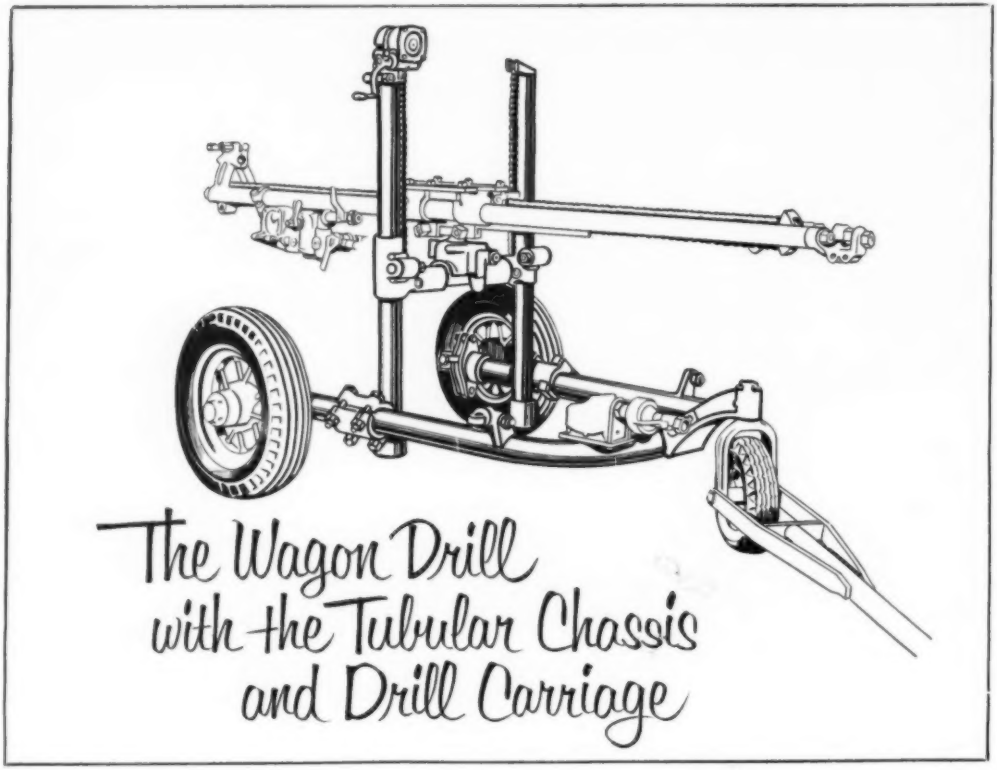


Longest Rotary Kiln in the Western Hemisphere.
500 feet long, 12 feet in diameter.

Designed and Furnished by F. L. Smidth & Co.
for Penn-Dixie at Kingsport, Tenn.

For Smidth Machinery apply to:

F. L. Smidth & Co., A/S Vestergade 33, Copenhagen K, Denmark	F. L. Smidth & Co. 11 West 42nd Street New York 36, N. Y.	F. L. Smidth & Co., Ltd., 105, Piccadilly, London, W. 1, England
F. L. Smidth & Cie France 80 Rue Taitbout Paris (9e) France	F. L. Smidth & Co. of Canada, Ltd. 11 West 42nd Street New York 36, N. Y.	F. L. Smidth & Co. (Bombay) Ltd. 42 Queen's Road Bombay, India



The Wagon Drill with the Tubular Chassis and Drill Carriage

G-300 Wagon Drill

The rugged tubular chassis and drill carriage of the G-300 WAGON DRILL provides rigidity and strength without unnecessary weight.

The tubular "H" structure that supports the drill carriage gives greater stability than the conventional design and minimizes vibration. The all-around sturdy construction of the G-300 maintains correct alignment at all times, insuring maximum drilling efficiency with minimum upkeep.

G-300 Wagon Drill

- is designed to take full advantage of the high drilling speed and strong rotation of the CP 4-inch 70-N Drifter.
- has controls conveniently centralized.
- is equipped with a specially designed feed motor and cone-gear drive for greater load-carrying capacity.
- has a heavy-duty centralizer.
- adaptable for all types of wagon drill work. Wheels can be turned at right angles to facilitate line drilling or drilling close to a ledge or wall.

Write for further information.

CHICAGO PNEUMATIC TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

news of the industry

PIT AND QUARRY

Solvay Process Division To Invest $350,000 In Dust Abatement Plan

As a part of the construction program of the Solvay Process Division, Allied Chemical and Dye Corporation, at Syracuse, N.Y., equipment costing $350,000 will be installed to for dust abatement at the firm's lime kilns.

First of several steps in the dust-abatement program involved alterations at the Jamesville, N.Y., quarry to reduce the amount of fine material carried to the crushing plant. These changes are presently in progress. As soon as approvel for the purchase of scarce materials can be obtained, the second step will be taken, and work will be started on installation of equipment at the kilns.

A new type of kiln cover, suggested by two plant employees at Syracuse, is now being tested. If the innovation proves successful, similar kiln tops will be installed on the remaining kilns.

37th Convention of N.S.G.A. Scheduled at San Francisco

Next year the 37th annual convention of the National Sand and Gravel Association will be held on February 23 to 26 in San Francisco, with headquarters at the Hotel Fairmont.

According to Vincent P. Ahearn, executive secretary, a housing bureau will be set up to work out satisfactory plans for room reservations. There will be no exhibit in connection with the 1953 convention, but members will have an opportunity to visit some of the outstanding sand-and-gravel installations in northern California.

American Cyanamid Affiliate Opens Plant Built for India

Officials of the Chemical Construction Corporation, a subsidiary of the American Cyanamid Company, recently announced the opening of a $50,000,000 plant for the production of artificial fertilizers which it had built for the Indian government at Sindri, Bihar.

At full capacity the plant is expected to produce more than 350,000 tons of ammonium sulphate annually. It is presently operating at about one-third capacity because of a shortage of high-grade gypsum, a "must" ingredient. At the sulphate plant ground gypsum is combined with ammonia and carbon dioxide to produce ammonium sulphate, with calcium carbonate as a byproduct.

It is planned to build a plant in which the calcium carbonate will be utilized to make 300 tons per day of high-quality portland cement.

Atherton and Evans, consulting engineers, P. O. Box 386, Annville, Pa., who have for some years been engaged in specialized engineering services for the lime and other nonmetallic minerals industries, have recently added the crushed stone and sand-and-gravel industries to the fields they cover. Among the services provided in these fields by Atherton and Evans are materials handling, equipment specification, layout, design, and operation.

Coming Events

April 7-9, 1952—Cleveland. Seventh annual meeting and lubrication show, American Society of Lubrication Engineers. Hotel Statler.

May 8-10, 1952.—Hot Springs. 50th annual convention and golden jubilee, National Lime Association. The Homestead.

May 15-17, 1952—Hot Springs. 17th Annual meeting, National Industrial Sand Association. The Homestead.

June 23-27, 1952—New York. 50th anniversary meeting and exhibit, American Society for Testing Materials. Hotels Statler and New Yorker.

September 3-13, 1952—Chicago. 100th anniversary conclave, American Society of Civil Engineers.

September 22-25, 1952—Denver. Metal and Nonmetallic Mineral Mining convention and exposition, American Mining Congress.

Name Boettcher Chairman Of Ideal-Pacific Board— Dobbins Is New President

At a recent board meeting in Denver, Colo., C. K. Boettcher was named chairman of the board of directors of the Ideal Cement Company.

Other officers elected as contemplated under the re-organization of Ideal and the Pacific Portland Cement Company, outlined in a prospectus filed with the Securities Exchange Commission last November, were the following: J. A. McCarthy, president of Pacific, now vice-chairman of the board; Cris Dobbins, former Ideal executive vice-president, now president; M. O. Matthews, former vice-president of Ideal's Southern Division, executive vice-president; T. W. Rosebaugh, executive vice-president of Pacific, vice-president; C. B. Flick, vice-president and treasurer of Pacific, now treasurer. G. W. Ballantyne, former secretary-treasurer of Ideal, will continue as secretary, and Oakley F. Counts will continue as comptroller of Ideal.

A dividend of 50 cents per share was declared payable to stockholders of record March 14, by the board.

Baughman Opens Building— Holds Big "At Home" Party

At Jerseyville, Ill., the Baughman Manufacturing Co., Inc., recently held open house to dedicate its newest and largest factory building. Residents of the area were invited to enjoy dancing and other entertainment. Between 2,500 and 3,000 attended the festivities.

The new structure contains 16,000 sq. ft. of floor space and stands on a 100-acre tract. With this new building, the Baughman plant now comprises 100,000 sq. ft. of floor space devoted to manufacturing, assembling, and storing facilities.

The Pacific Silica Products Company, Los Angeles, Calif., has leased sand deposits and a mill at Moorpark, Calif., owned by Walter J. Saviers, according to Albert L. Capstaff, Pacific president. Work has started on new storage bins and installation of new screening machinery. Pacific plans to increase its present output of 30 tons a day to over 100 tons.

Feb.-Jan. Building Totals In 37 Eastern States Show Downward Trend

Construction contracts awarded in the 37 states east of the Rockies during February, 1952, totaled $885,206,000, or 2 percent less than January of this year, and 22 percent less than February, 1951, according to an announcement made by the F. W. Dodge Corporation. Awards for the first two months of this year were $1,787,297,000, or 18 percent less than the total for the first two months of 1951.

Non-residential contracts in February totaled $301,404,000, or 16 percent less than January and 30 percent lower than in February last year. Residential awards of $396,438,000 were 17 percent higher than January, but were 25 percent lower than February, 1951. Public and private works and utilities at $187,364,000 were down 9 percent from January, but were up 5 percent over February a year ago.

Two-month 1952 totals compared with two-months 1951 were as follows: Non-residential, $639,080,000, down 26 percent; residential, $734,159,000, down 23 percent; public and private works and utilities, $394,058,000, up 16 percent.

4-Story Crusher Designed For 3,500-T.P.H. Output

A road 1 mile long, 18 ft. wide, and 8 in. deep could be constructed from the output of a crusher now being made by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

This crusher, which is four stories high, will be used to crush taconite ore on the Mesabi Iron range of Minnesota. It will have a capacity of 3,500 tons of crushed ore an hour, will weigh 1,250,000 lb., and will be driven by two 500 hp. motors. The main shaft will be a steel forging 27 ft. long, up to 4½ ft. in diameter, and weighing more than 100 tons.

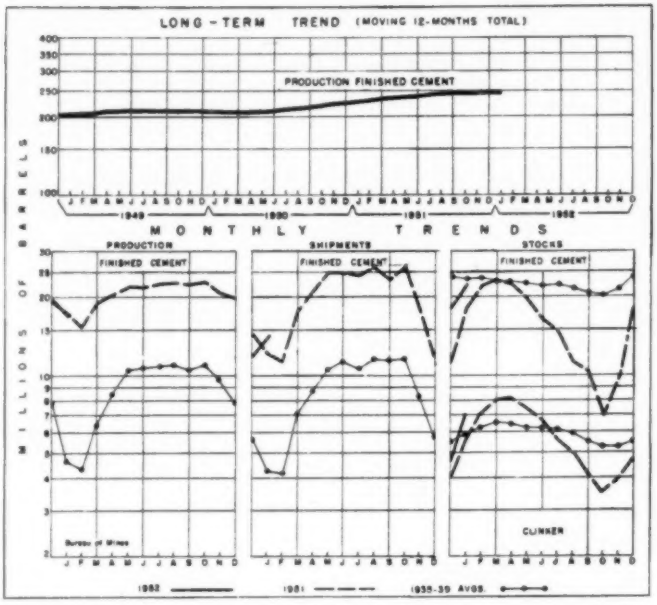
The crusher is designed to take pieces of ore over 5 ft. in the smallest dimension and crush it down to 10 in.

Government Controls Fix New Prices of Mexican Cement

The Mexican Government's Official Price Control Agency has fixed new prices for cement—115 pesos per ton (approximately $13.50), plus 15 pesos added for bagged cement ($1.35 U. S.). This move has been made necessary because of speculation in cement prices by distributors recently.

The Department of Economy had warned the industry to stop speculation, and many fines had been leveled against flagrant violators. The National Association of the Cement industry in Mexico had defended its membership, stating that transportation of cement from producing plants to centers of distribution and then to construction jobs represented a heavy added cost.

The price agency's new ruling covers the sale of cement not only in Mexico City but throughout the republic as well. The increased price has had repercussions in the construction industry, and a slump has been noted in building activity.



SUMMARY—The output of 17,039,000 barrels of finished portland cement in January, 1952, as reported to the U. S. Bureau of Mines, was 2 percent less than that reported for January, 1951. Mill shipments totaled 12,696,000 barrels—an increase of 4 percent over the January, 1951, figure, while stocks of 22,336,000 barrels of finished cement were 23 percent higher than at the same time a year ago. Clinker output during January was 2 percent higher than in January, 1951, and amounted to 19,547,000 barrels.

PRODUCTION—One hundred fifty-two (152) plants located in 36 states and Puerto Rico produced 17,039,000 barrels of finished cement during the month, as compared to 149 plants, which manufactured 17,434,000 barrels in January, 1951. As indicated above, clinker production was up 2 percent over the same month in 1951.

SHIPMENTS—Mill shipments of finished cement increased 4 percent over the total reported for January, 1951. Shipments were greater in ten districts and smaller in eight districts, with no change in one, as compared to those recorded for January, 1951. The percentage changes range from a 35 percent increase in the Tennessee district to a decrease of 24 percent in the Oregon-Washington district. Shipments were up 18 percent in Texas, while California showed a marked decline of 12 percent.

STOCKS—Mill stocks of 22,336,000 barrels of finished cement were reported for January, 1952—23 percent higher than a year ago, while stocks of clinker on January 31 amounted to 7,028,000 barrels—28 percent more than at the same time in the preceding year.

U.N. Scholarships Granted Three Venezuelan Geologists

Three Venezuelan geologists have been selected to take post-graduate courses in United States universities under United Nations scholarships. They are Leandro Miranda Ruiz, Jose Mas Vall, and Gustavo Rivero of the geology department, Ministry of Mines and Hydrocarbons.

These scholarships seek to promote the exchange of nationals between countries of the international organization. This is the second time the United Nations has offered scholarships to Venezuelan technicians. In 1948 a Venezuelan geologist and a petroleum engineer were favored with similar opportunities.

Selection of students is made through the Ministry of Foreign Relations, after recommendations of the Ministry of Mines and Hydrocarbons.

7 Guessers Miss by One— Lucky Man Draws Shotgun

At the recent crushed stone convention in Chicago, one of the exhibitors, Olin Industries, Inc., East Alton, Ill., held a contest which created a great deal of interest. The idea was to guess the number of blasting caps in a glass bowl.

Actually there were 3,332 caps, and seven different persons gussed 3,333. In drawing for the winner, Charles B. Elder of the Trap Rock Material & Engineering Company, Iron Mountain, Mich., won the prize, a Winchester Model 12 shotgun.

Members of the National Industrial Sand Association have been informed that the dates for the 17th annual meeting have been changed from May 14, 15, and 16 to the 15, 16, and 17. Sessions will be held at The Homestead, Hot Springs, Va. The change was necessitated by a conflict in dates at The Homestead.

Golden Jubilee of N.L.A. To Be Celebrated At Convention, May 8-10

50 years is a long time for an association to be in continuous existence—particularly in the chemical and building products fields. Yet, the National Lime Association now has this distinction, and plans are being made for a real Golden Jubilee convention at The Homestead, Hot Springs, Va., on May 8-10, 1952. In accordance with the policy for the last six years, this meeting will be restricted to representatives of member lime manufacturers and invited guests.

There will be a Golden Jubilee souvenir brochure and a playlet, with lime manufacturers as actors, in which a National Lime Association board of directors' meeting of 45-50 years ago will be re-enacted.

There will be in attendance a number of the old-time leaders of the industry, headed by Charles Warner and George B. Wood, former presidents of the Warner Company, Philadelphia, and the Rockland-Rockport Lime Company, Rockland, Me., respectively. Both were prominent past presidents of the N.L.A.

The story of Charles Warner is unique indeed. Actually, he is (and has been for some time) the only living charter member of the National Lime Association. He was the Association's first "temporary" chairman and its second president. He served (at various times) as the National Lime Association's president for a total of nine years. For over 50 years he has been a leader of the lime industry.

Other convention speakers include Walter H. Acheson, chief, building Materials Branch, Office of Price Stabilization; J. Milton Cooper, N.L.A. legal counsel, speaking on percentage depletion; Harold Montag, director, Mining Machinery Division, National Production Authority, who will discuss priorities; Professor Walter C. Voss and Professor J. A. Murray of Massachuetts Institute of Technology on their fundamental research on lime; and Roland F. Smith, N. J. Division of Fish and Game, on neutralization of lakes and ponds.

Kaiser Aluminum & Chemical Buys Nevada Fluorspar Mine

The Henry J. Kaiser interests have invaded another branch of the nonmetallic-minerals industries, following acquisition of the Baxter fluorspar mine and deposits at Broken Hills, Nev., by the Kaiser Aluminum & Chemical Corporation.

Plans are in the making for the erection of an extensive processing plant, probably in Gabbs Valley, where there is a good water supply. The proposed plant will include crushing, screening, and grinding equipment, as well as a battery of flotation cells to recover concentrate to yield hydrofluoric acid. The acid will be used in manufacturing aluminum fluoride and synthetic cryolite.

The Baxter workings have been developed to a depth of about 250 ft. by H. W. Gould & Co., San Francisco, who sold them to the Kaiser interests. High-quality spar exists more than 200 ft. below the present workings, however, according to the U.S. Bureau of Mines, which diamond-drilled the deposits in 1950.

Huntley Industrial Minerals To Increase Talc Production

Huntley Industrial Minerals, Inc., Bishop, Calif., recently purchased the Blue Star mill east of Big Pine, Calif., for the processing of talc, according to Wright H. Huntley, president of the firm. Increased production from Huntley's three properties at Oasis, Saline Valley, and Gabbs Valley, Nev., is scheduled, with an estimated 300,000 tons of commercial grade talc to be blocked out.

The Tungstar plant near Bishop, also purchased recently by the Huntley concern, has been reconditioned, and will be operating on ore and tailings from the company's scheelite properties at Tungsten City, Nev. The Tungstar plant has an approximate daily capacity of 300 tons of ore, and will handle 200 tons of tailings and 100 tons of ore per day.

The 1952 executive body of the newly-organized Wisconsin chapter of the American Material Handling Society includes the following: F. W. Chalberg, Beloit, president and national director; G. H. McKenzie, Milwaukee, executive vice-president; Irving M. Footlik, Chicago, regional vice-president; A. E. Gall, Milwaukee, vice-president; W. S. Brager, Madison, secretary; and T. R. Edwards, Menasha, treasurer.

Cover Picture....

• The front cover picture this month shows the unusually interesting portable crushed stone plant setup of B. L. Anderson at Garrison, Iowa. In this quarry four shovels feed two unitized crushing and screening plants, and a part of their output goes to a 100-t.p.h. asphalt plant nearby. This operation is notable for the small number of men required to operate it. In the cover photo two men are shown at each position, one being the relief man ready to take over. The plants are moved out and back into the quarry every three or four days when a shot is made, this being done in three or four hours.

Carl D. Franks Appointed Executive Vice-President Of Portland Cement Assn.

Carl D. Franks, vice-president for promotion of the Portland Cement Association since 1948, has been appointed to the newly-created position of executive vice-president, according to an announcement issued by Smith W. Storey, chairman of the P.C.A. board of directors.

Carl D. Franks

As executive vice-president, Mr. Franks's responsibilities will include exercising the duties of the president of the Association in that official's absence. He will also have such other duties as may be assigned to him by the president or the board of directors. The post of P.C.A. president, left vacant by the death of Frank T. Sheets last November, has not yet been filled.

Mr. Franks has been a member of the P.C.A staff since it was established in Chicago in 1916. His first position was that of district engineer in charge of the Indianapolis office. Eight years later he was appointed to the position of Midwestern regional manager, directing the activities of seven of the Association's district offices. In 1948 he became vice-president for promotion, and for the last four years he has supervised the promotive activities of the Association, including the work of 26 district offices serving cement users in 45 states, the District of Columbia, and British Columbia.

Mr. Franks is a graduate of Purdue University, from which he holds a Bachelor of Science degree in civil engineering.

W. P. Heineken, Inc., Engineers, of New York City have announced that a contract has been granted the firm by the Sunnyhill Aggregates Corporation, Pittsburgh, Pa., for the construction of a rotary kiln and cooler for processing lightweight aggregates from shale in its new Lexington, Ohio, plant.

• At a dinner given recently in Los Angeles by the directors of the Southern California Rock Products Association Mr. and Mrs. Albert R. Shiely were honored to mark Mr. Shiely's election to the presidency of the National Sand and Gravel Association. Reading around the table, beginning at the extreme left are H. E. Bender, Mrs. Shiely, Robert Mitchell, Mrs. N. J. Redmond, Russell C. Graham, Mrs. Quentin W. Best, Carder B. Livingston, Mrs. P. J. Akmedzich, H. N. Goodreau, Mrs. Goodreau, Dewey Manning, Mrs. Manning, H. G. Ferau1, executive secretary of the Southern California Rock Products Association), P. J. Akmedzich, Mrs. Graham, Q. W. Best, Mrs. Mitchell, N. J. Redmond, Mrs. Bender, and A. R. Shiely.

Milwaukee County Ordinance To Regulate Pit Operations

The Milwaukee County board of Wisconsin is preparing an ordinance to regulate the operation of pits and quarries. As drafted, the ordinance would keep excavations at least 85 feet from a street or highway. Outer edges will have to slope away from the street, and pits and quarries can be no closer to other properties than 25 feet. Stockpiles for pits and quarries can be no higher than 20 feet on quarry or pit property, and stock piles must be fenced in. Trucks taking products from pits or quarries cannot use adjacent residential streets unless the latter are the only ones leading to the pit or quarry.

The new ordinance would be effective in five towns of Milwaukee county, and all operators must get permits from the Milwaukee County building inspector before starting operations, once the new ordinance is adopted. Within a year after cessation of operations, pits or quarries must be filled with earth, foundry sand, and other suitable material. Rubbish, garbage, ashes, junk, or other refuse cannot be used in filling in unused pits or quarries.

New Use Found for Cardox In Bins, Silos, and Stockpiles

The Cardox cartridge, already familiar to producers and manufacturers in the cement, lime, coal and steel industries, has recently been successfully used to free solidified bulk material in storage bins, vertical silos, and outdoor stockpiles.

Many materials which are stored in bulk for curing or other purposes, attain a degree of hardness which makes reclaiming an irritating and often hazardous procedure. The over-hanging faces, caves, and rat holes which develop require constant care and watchfulness on the part of drillers, tractor operators, and loaders; and descending into a silo to induce free flow is as disagreeable as it is dangerous.

Although the use of Cardox does not do away with the need for drilling, it can almost entirely eliminate the overhangs and caves and, at the same time, deliver loosened material to the floor for easy handling by loading equipment. Since the use of almost any drilling and shooting pattern is permitted, vertical, slanted, or horizontal holes may be used singly or in combination to produce a clean face, to clear out bin corners, and to clean off bin walls and bulk heads.

It is often possible to loosen material in vertical storage from the outside without having to lower men and material directly into the structure. Phosphates, potash, mixed fertilizer, and soda ash in both vertical and horizontal storage can be loosened and freed by Cardox for easy loading out.

The mild release pressures, plus the inert carbon dioxide charge of each Cardox cartridge, reduces the noise and vibration factor to the minimum and eliminates any possible fire hazard from the reclaiming procedure. It is a simple, efficient, and safe method.

A new $40,000 lime crushing plant has been completed and placed in operation at Calico Rock, Ark., by J. W. Dillard. The new plant has an estimated capacity of 200 tons daily.

Mexico is trying to step up sulphur production in the face of the world shortage. It was reported that 1,000 tons a month are being taken from the Guaxcama mines in San Luis Potosi. A goal of 4,000 tons per month is expected to be reached in the near future.

Phosphate Advisory Group Confers with DMPA On Industry, Defense Issues

Problems of expanding the production of phosphate to meet sharply increased defense and agricultural needs were discussed at the first meeting of the Phosphate Industry Advisory Committee to the Defense Materials Procurement Agency.

The committee met in Washington at the invitation of Jess Larson, DMPA administrator. It is made up of representatives of producing companies who will advise DMPA in its program to increase the domestic production of phosphate. Tom Lyon, director of DMPA's Domestic Expansion Division, is chairman, and James A. Barr, chief of the agency's Industrial Minerals Branch, co-chairman.

Industry officials were told of projected requirements for defense and agriculture through the mobilization period and invited to offer suggestions for plans which will lead to expanding present mining and producing facilities and the opening of new deposits.

The committee advised DMPA that producers would need government assistance in obtaining priorities for scarce machinery, equipment, and operating supplies if they are to keep pace with the increased demand for phosphate. Another production problem, they pointed out, is the shortage of sulphate for sulphuric acid which is needed by the industry to produce fertilizer.

Other matters on the agenda included discussions on the imports and exports of phosphate; availability of phosphate rock reserves; production capacity increases possible for present plants without adding new facilities; and forecasts of any shift in the location of major production centers.

Advisory committee members were informed that DMPA is now in the process of formulating a phosphate program based upon its own studies and the opinions given it by industry, and that a plan of action will be announced in the near future.

Dravo Corp. Given Contract To Construct Cheatham Dam

The contracting division of the Dravo Corporation, Pittsburgh, Pa., has been awarded the contract for the construction of the Cheatham Dam in the Cumberland River, Cheatham County, Tenn., on a bid of $3,086,414 to the Corps of Engineers, U. S. Army, Nashville, Tenn., district.

Concrete aggregates for the project will be furnished by Lambert Brothers, Inc., Knoxville, Tenn.

International Minerals & Chemical Corporation officially opened its new chemical fertilizer and superphosphate plant in North Fort Worth, Tex., on March 5 with an allday open house and inspection for approximately 1,000 dealers, salesmen, and customers.

Open Meeting Sponsored By Agstone Division Of Pennsylvania Assn.

An open meeting sponsored by the Agricultural Limestone Division, Pennsylvania Stone Producers Association was held on January 30 in the Plant Industries Building at Pennsylvania State College, State College, Pa. Producers of agricultural liming material and officials and farmer fieldmen of the Production and Marketing Administration of the U.S. Department of Agriculture attended. After the open meeting the Agricultural Limestone Division held its regular business meeting. Leonard S. Fry, chairman of the division, presided at both meetings.

Clyde Zehner, chairman of the state committee, Production and Marketing Administration, was the first speaker at the open meeting. Mr. Zehner pointed out that certain forces have been constantly at work to eliminate the federal appropriation for PMA. In order to protect this appropriation, Mr. Zehner advised those present to contact their representatives and U.S. senators and inform them of their desire to have the appropriation continued. This "reminding" should be done throughout the year, and not just when the appropriation comes up for reconsideration.

The next speaker was Everett H. F. Felber, assistant area director, PMA, Washington, D.C. Mr. Felber stated that the Agricultural Conservation Program under the PMA can be defended, and that increased production due to the conservation program more than justifies the financial aid of the government. The speaker also declared that in 1953 the PMA will devote enough time to each farmer to determine what his farm needs most in the way of conservation. It is hoped that this work, to be done with the aid of county committeemen, will greatly improve the conservation program. Sam Omasta of the National Agricultural Limestone Institute spoke briefly on the subject of percentage depletion, and the activities in which N.A.L.I. is presently engaged.

Routine reports were presented at the business meeting. In his annual report, Secretary Wagner presented the 1950 and 1951 figures on tons of limestone purchased by the PMA and the farmers of Pennsylvania. In 1950 PMA purchased 452,250 tons under the contract plan and 172,500 tons under the purchase order, while farmers purchased for cash an additional 525,000 tons (for which they claimed repayment), making a grand total of 1,149,750 tons. In 1951 PMA purchased 425,000 tons under the contract plan and 223,750 under the purchase order; farmers purchased for cash an additional 500,000 tons (figures not complete), making a grand total of 1,148,950 tons Mr. Wagner mentioned the winning of percentage depletion for agricultural limestone.

The following officers and directors were appointed for the ensuing year: Leonard S. Fry, chairman; D. K. Shroyer, vice-chairman; H. M. Binkley, treasurer; H. H. Wagner, secretary; Ivan M. Martin and Fred Roberts, Eastern Section directors; W. O. Faylor and Glenn Hawthorne, Central Section directors; and P. E. Heim and Herschel W. Lamb, Western Section directors.

• Columbia Quarry Co., St. Louis, Mo. "quarries" open hearth slag at the Granite City (Ill.) slag processing plant to recover minus 10 plus 1-in. material to be used for riprap on both sides of the 8-mile long Chain of Rocks Canal above St. Louis. A 2-cu. yd. Lorain 820 shovel is used to load up to 2,200 yd. of slag into three 10-cu. yd. end-dump Easton hauling units which carry it to the screening plant a few hundred feet away. About 425,000 cu. yd. of material is to be dug.

A.S.C.E.'s 100th Anniversary To Be Celebrated Sept. 3-13

Plans for a 100th anniversary "conclave" of the American Society of Civil Engineers are presently in the making. Dates of the affair, which is to be held in Chicago, are September 3 to 13. It is expected that the celebration will be attended by approximately 25,000 engineers from all over the world.

Centennial of Engineering, 1952, Inc., has been set up for the organization and control of the centennial, with Charles F. Kettering, director and consultant of General Motors, as chairman of the executive committee.

Big Belt Testing Machine Installed in Raybestos Lab

Raybestos-Manhattan, Inc. has placed in operation at its laboratory at Passaic, N. J., what is said to be the world's largest conveyor belt testing machine.

The machine takes standard production-scale belts up to 30 in. wide and 80 ft. long. It duplicates actual conveyor equipment arrangement of head, snub, bend, take-up and tail pulleys, with adjustable angle and elevation of troughing idlers. Automatic recorders simultaneously record power input, stretch, tension, and speed up to 2,000 f.p.m.

Designed to test the effect of pulley size, tension load, overload, thickness, splices, and fasteners, the machine is expected to supply valuable information on constructing conveyors of unusual size or for unusual requirements.

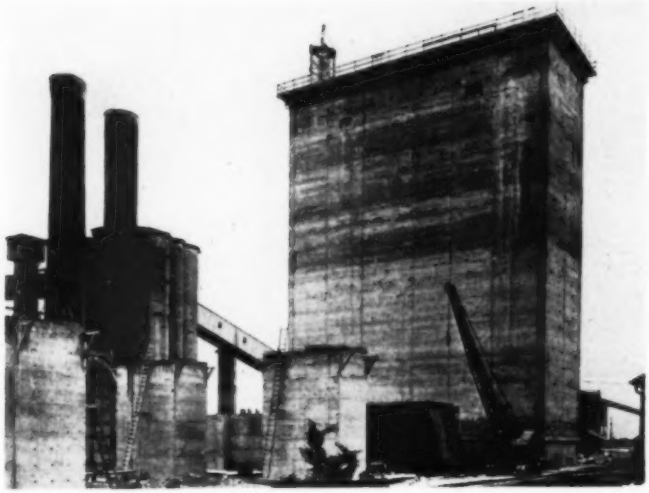
Bentonite Production in 1950 Passes All Annual Totals

American bentonite producers enjoyed the best year in the history of the industry. According to reports of producers to the U.S. Bureau of Mines, there was in 1950 a 12 percent tonnage increase over 1949, as well as a 23 percent in value, as compared to 1949. The general upswing in national economic conditions, particularly the increased activity in oil-well drilling and the overall expansion in the foundry industry were directly responsible for this large bentonite production. Sales to foundries in 1950 increased 41 percent over 1949; sales to the rotary drilling industry increased 14 percent.

Nine state reported bentonite production in 1950, the same as in 1949. Increases in tonnage appeared in California, Mississippi, South Dakota, and Wyoming, and decreases in Texas, Arizona, Utah, and Idaho. Colorado reported a small tonnage in 1950, but did not report in 1949. No production was reported from Montana in 1950.

The Wyoming-South Dakota district accounted for 60 percent of the total bentonite produced in 1950 (Wyoming-40 percent and South Dakota 20 percent), as compared with 56 percent in 1949. Texas furnished 3 percent of total sales, the same as in 1949 and 1948. The remainder was produced in California, Mississippi, Arizona, Colorado, Utah, and Idaho. The average value per ton as reported by the producers to the Bureau of Mines in 1950 increased to $8.79 per ton, as compared with $8.00 per ton in 1949 and $7.74 in 1948.

The United States Gypsum Company of Chicago has been awarded a citation by the National Association of Home Builders for "outstanding contributions to better, safer buildings". W. P. Atkinson, association president, presented the citation to U. S. Gypsum's Oliver M. Knode, president, and Clarence H. Shaver, chairman, at the N.A.H.B. convention at the Conrad Hilton Hotel in Chicago.



• Basic's eight-day wonder, a 122-ft. high stone storage silo at Maple Grove, Ohio. The concrete piers in the foreground will support the two new rotary kilns.

More on World's Tallest Silo At Basic's Maple Grove Plant

Pictured above is the out-size 122-ft. high stone storage silo of Basic Refractories, Inc., at Maple Grove, Ohio, which we described in the new pages of the March issue. With the photograph, which arrived too late for publication in March, we received the following additional information: the 12-bin silo will store about 10,250 tons of No. 6 stone (⅜-in.) in eight compartments and a substantial tonnage of supplemental raw material in the others; the new silo will be fed by a cross belt from the adjacent silo, which in turn is fed by a 735-ft. conveyor from the quarry stone mill; dolomite will be processed to sizes from 4½-in. to 100-mesh at the stone mill; kilns are inclined away from the silo and are revolved at about ¾ to 1 r.p.m.

The American steel industry consumes up to 70 lb. of dead-burned dolomite (product of Maple Grove operation) for every ton of steel produced. Present output at Maple Grove will be upped from 600,000 tons annually to at least 900,000 after the installation of two new kilns. Basic also runs a $3,000,000 plant at Gabbs, Nev., for the production of dead-burned magnesite. See PIT AND QUARRY, March, 1952, page 96.)

We inadvertently upped the value of the Maple Grove facilities in last month's news item from $3,500,000 to a mere $35,000,000. Sorry!

Output of Native Sulphur Sets New Record in 1951

A new production record was established by the domestic sulphur mining industry in 1951, according to reports of producers to the U. S. Bureau of Mines. Production of native sulphur totaled 5,278,249 long tons—2 percent more than in 1950. Output exceeded 400,000 long tons in every month, reaching the highest levels during the third quarter, in which the monthly average was 456,523 long tons. In the fourth quarter it declined to an average of 438,096 long tons.

Over a period of years prior to 1951, producers' stocks of sulphur declined continuously as sales exceeded production. By 1951 stocks were so low that this practice could no longer be continued, and consequently less sulphur was shipped from the mines than in 1950. Similarly, apparent sales in 1951 of 5,095,347 long tons were 10 percent below 1950. At the end of 1951 producers' stocks totaled 2,837,432 long tons.

Lester G. Morrell Named To Bureau of Mines Post

Lester G. Morrell has been appointed chief of the North American Division of Region IX (Foreign Minerals) of the Bureau of Mines with headquarters in Washington, D. C., according to an announcement made by Secretary of the Interior, Oscar L. Chapman.

In his new post, Mr. Morrell will serve as technical expert and commodity specialist on problems relating to the resources, development, production and foreign trade of minerals and metals in Canada, Greenland, Hawaii and Bermuda. He will consolidate and analyze economic reports of mineral attachés in the State Department's foreign service. E. W. Pehrson is regional director for Region IX.

Mr. Morrell has been with the Bureau's North American Division since 1950. On a recent special assignment with the Economic Co-operation Administration, he made a study of the sulphur resources of the Philippine Islands to determine the feasibility of establishing a fertilizer industry.

Sand and Gravel Men Of Keystone State Hold Meeting at Harrisburg

The annual meeting of the Pennsylvania Sand and Gravel Producers Association was held at the Penn-Harris Hotel, Harrisburg, Pa., on March 11, with representatives from 12 member-companies attending. J. P. Eyre Price, president, opened the program.

The following slate of officers was proposed and accepted: president, J. P. Eyre Price (re-elected); vice-president, W. S. Giles (re-elected); executive secretary and resident engineer, H. Hershey Miller (re-elected); and treasurer, E. K. Davison. Ray V. Warren, who previously served as both secretary and treasurer, tendered his resignation prior to the election. H. Hershey Miller will assume the secretarial duties formerly handled by Mr. Warren.

In his report of his activities during the last year, Mr. Miller told of the new members acquired and the advantages gained through the recently enacted federal percentage depletion tax provision for sand and gravel. Regarding the percentage depletion enactment, a motion was adopted to extend the Association's thanks to Senators Duff and Martin, Congressman Simpson, and the National Sand and Gravel Association for the work they performed in bringing about the enactment of the law. A committee was also appointed to investigate the list of proposed new member-companies whose products are acceptable under the current specifications of the Pennsylvania Department of Highways.

After the reports of the resident engineer and the secretary-treasurer, which were approved and accepted, consideration was given the proposed changes in the aggregate gradations requirements of the Pennsylvania Department of Highways. President Price appointed a technical committee, as recommended in the resident engineer's report, to study the proposed changes. It was resolved that any member having objections to the proposed new gradings file them with Mr. Miller. Such objections would be considered later by the technical committee and discussed with representatives of the department of highways.

At the luncheon the Association had as its guests over 20 representatives of the Pennsylvania State Highway Department and the Pennsylvania Turnpike Authority.

Appropriately featured in the January-February issue of Denver Equipment Company's *Deco Trefoil* was the firm's 25th anniversary. The silver anniversary number told the impressive story of the firm's rise and growth and honored the men who led in its progress. Also included in the copiously illustrated publication were Bulletin D4-B2 (Denver dryer installations), Bulletin F10-B62 (mills), and Bulletin M7-F16 (flotation and fluorspar), as well as a special sheet for the kiddies' entertainment.

New Jamaican Plant Of Caribbean Cement Co. Dedicated at Kingston

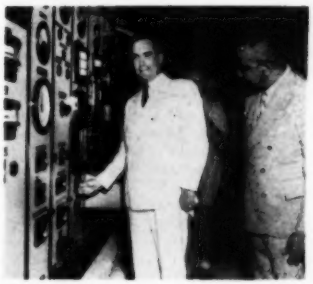
At a ceremony attended by several hundred invited guests, the Caribbean Cement Company Limited officially opened its 600,000-barrel-per-year wet-process plant on January 28. Sir William Stephenson, chairman of the company, presided at the opening ceremonies, and Sir Hugh Foot, governor of Jamaica, threw the switch which officially opened the factory.

The bulk of the output of the new factory will be consumed in Jamaica itself, which is currently using cement at the rate of over 450,000 barrels per year. The small surplus left over after Jamaica's needs are taken care of will be exported to other Caribbean countries, principally other islands among the British West Indies.

Located on the outskirts of the city of Kingston, its principal market, the Jamaica plant is said to be especially well-situated with respect to raw materials and transportation. Virtually unlimited reserves of limestone are available from a quarry cut into a mountain situated at one side of the plant, while clay is dredged from the bottom of Kingston harbor at the other side. Gypsum is trucked from a quarry less than two miles away. Oil is piped from a tank farm operated by one of the oil companies adjacent to the cement plant. The cement company generates its own power in a diesel-electric generating station on the property, in which are installed four 800-kw. generating sets.

The plant was engineered by F. L. Smidth & Company, Ltd. Total capital cost, including power plant and working capital was $3,200,000.

The organization and financing of the Caribbean Cement Company was a joint effort of British, American, and Jamaican capital. The management of the company is in the hands of an international board of directors consisting of two directors from England, two from the United States, and three from Jamaica. The American directors are both affiliated with the Cement and General Development Corp. of New York.



• Sir Hugh Foot, governor of Jamaica, standing on the burner's platform, throws a switch at the opening of the Caribbean Cement plant. At his side is the Honorable Sir Harold Allan, minister of finance, who promoted measures for establishing a Jamaican cement industry.

• At the Caribbean Cement Company's opening ceremonies were Colonel Leslie East, managing director; His Excellency Sir Hugh Foot, governor of Jamaica; and Sir William Stephenson, chairman of the firm.

Lone Star, Freeport Sulphur Publish Preliminary Reports

Preliminary reports for the year ended December 31, 1951, of the Lone Star Cement Corporation revealed the following figures: The firm's sales amounted to $71,381,917, resulting in a net profit of $8,350,805, equal to $2.93 per share in 1951, as compared with $64,390,582 in sales, resulting in a net profit of $10,030,292, equal to $3.52 per share (based on shares presently outstanding) in the previous fiscal year.

The Freeport Sulphur Company reported a net income of $6,308,897, equal to $2.63 per share in 1951, as compared with a net income of $6,768,739, equal to $2.82 (adjusted to reflect a 3-for-1 stock split in September, 1951) reported for 1950.

The Minnesota Mining and Manufacturing Company, St. Paul, Minn., has opened a new branch sales office and warehouse at Newton Center, Mass.

Uneven Production Totals In Gypsum Products Noted by Mines Bureau

Domestic mine production of crude gypsum duing the third quarter of 1951, as reported to the U. S. Bureau of Mines, was 2,270,710 short tons. Production of calcined gypsum during the July-September period of 1951 declined slightly from that of the same period in 1950, while the output of all gypsum board was somewhat higher than in the third quarter of 1950. The board figure was, however, 4 percent lower than in the preceding record-breaking quarter.

The quantity of gypsum used as retarder in cement soared to a record 593,454 short tons. Output of base-coat plaster was approximately the same as in the second quarter of 1951, but was 15 percent less than in the same period in 1950.

As a group, greatest gains were registered by the uncalcined products. Agricultural gypsum showed a quarterly increase of 39 percent and an increase for the current January-September period of 77 percent, as compared to the same months of 1950.

Bureau Reports on Wartime Mississippi Bauxite Tests

Results of a wartime investigation of high-alumina clays and bauxite deposits in northeastern Mississippi are presented in a new Bureau of Mines report.

During World War II, when alumina and bauxite were urgently needed to boost the manufacture of aluminum, the Bureau drilled 84 hand-auger holes with an aggregate of 2,585.8 feet and 87 core-drill holes with an aggregate of 5,507.4 feet in the deposits at Fowler, Pinedale, Waldrop, and Toccopola, which had been discovered originally in 1921. The report includes detailed descriptions of the total of 159 auger and 250 core samples obtained.

A free copy of Report of Investigations 4827, *Investigation of High-Alumina Clays and Bauxite of Northeastern Mississippi*, may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

• The 600,000-barrel-per-year plant of the Caribbean Cement Co., Ltd., located at Kingston, Jamaica.

Mines Bureau Describes Newly-Developed Method Of Making Fluorspar Pellets

A successful method of producing fluorspar pellets meeting metallurgical requirements is disclosed in a report published by the U. S. Bureau of Mines.

Used as a flux chiefly in the production of steel, the supply of coarse domestic fluorspar, commonly called gravel spar, is rapidly being depleted. Because of the growing scarcity of gravel spar, it is generally accepted that ultimate utilization of metallurgical-grade flotation concentrates will be necessary, according to the report. Because the proportion of fines must be kept low, pelletizing or nodulizing will be required.

The objectives of the investigation were to study pellet- and nodule-making methods and evaluate some binders, to obtain technical data and determine possible outlets for a future, larger-percentage production of finely divided metallurgical fluorspar, chiefly in the form of flotation concentrates. Small batches of fluorspar flotation concentrates were made into nodules and pellets on a laboratory scale. Several of these were rated acceptable by laboratory evaluation methods.

The most satisfactory pellets were produced by mixing fluorspar with about 12.5 percent of water, by weight, and 4 percent organic binders that originated from the petroleum and woodpulp industries. The report was written by H. Kenworthy, metallurgist, Bureau of Mines, Rolla, Mo.

A free copy of Report of Investigations 4829, *Nodulization and Pelletization of Fluorite Concentrates*, may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

Aggregates, R.M.C. Firms In Denver Give Wage Hikes

Deferred wage increases for 343 employees of 12 Denver sand, gravel, and ready-mixed concrete companies were approved recently by the Eleventh Regional Wage Stabilization Board.

Employees of the following concerns received the pay hikes: Brandon Sand and Gravel Company, Central Mix Concrete Company, Colorado Pre-Mix Concrete Company, Concrete, Inc., D. E. Hall Sand and Gravel Company, Ready Mixed Concrete Company, Rio Grande Gravel Company, William E. Russell, Spratlen Materials, Inc., and Superior Sand and Gravel Company.

Mexican Cement Production Nearly Tripled in 10 Years

Cement production in Mexico in the last few years has advanced considerably, according to statistics revealed by the government. In 1940 there were eight cement plants; by 1950 the number had risen to 19. Production capacity, which was at 679,000 tons a year in 1940, rose to 1,974,000 tons in 1950, an increase of 190 percent. This increase has transformed Mexico from an importer to an exporter of cement.

Mexican cement was welcome in the United States, especially in the Southwestern area, where cement was scarce and a vast building boom of aviation factories and defense plants was going on. Industrial development, especially in Texas, was so great that iron and steel foundries were constructed to take care of the area's needs. This naturally meant that Mexico exported large quantities of cement to the U. S.

Now, however, with plants completed last year producing 10,000,000 barrels of cement annually and this year's construction adding 10,000,000 to 12,000,000 barrels a year more to cement production (half of this located in the southern part of the U. S.), Mexican cement plants, especially those located near the frontier, have lost a lucrative market.

The United States Senate on February 20 confirmed the nomination of John J. Forbes as Director of the Bureau of Mines. Mr. Forbes succeeds James Boyd of Colorado.

---

this sword challenges CANCER

Under the sign of the cancer sword the American Cancer Society seeks to save lives by spreading vital facts to you, your neighbors, and your physicians . . . by supporting research . . . by providing improved services for cancer patients.

Only under the sign of this sword is there a three-fold, national attack on cancer. Cancer Strikes One in Five. Your Dollars Will Strike Back.

Mail Your Gift to "Cancer" Care of Your Local Postoffice

AMERICAN CANCER SOCIETY

• April has been designated Cancer Control Month by Congressional resolution; and this month represents the climax of the American Cancer Society's year-round attack on this major health threat. Although much has been accomplished in the cancer-control program, much remains to be done, and we wish to urge that our readers cooperate in aiding the 1952 Cancer Crusade by giving it their financial assistance.

Ideal Cement Company Forms New Corporation Headed by Dobbins

Formation of Great Western Aggregates, Inc., was recently announced by officials of the Ideal Cement Company. By means of the new organization and Ideal's expanded research laboratories it is expected that important progress will be made in finding the most suitable aggregates for various types of concrete.

Working in co-operation with Ideal's technicians and the production department, G.W.A. geologists locate, prove, and develop raw material supplies to provide needed assurance of plentiful resources at the company's quarries.

Heading the new corporation is Cris Dobbins, president, assisted by Bob Blanks, vice-president and general manager, and Lynn Norred, his secretary. John Hand is secretary-treasurer.

U. S. Phosphate Production Tops 11,000,000 Tons in 1950

Mine production of phosphate rock in the United States in 1950 reached a record high of 11,114,159 long tons, exceeding the previous record of 1938 (9,388,160 tons) by nearly 1,750,000 tons, according to reports submitted by producers to the U. S. Bureau of Mines. Increases were shown in Florida, Tennessee, and most of the Western states. Supplies of phosphate rock were plentiful, and large quantities were added to the stocks in producers' hands.

Sales likewise increased, rising from 8,986,933 long tons in 1949 to 10,253,552 tons in 1950. Increased sales in Florida and Tennessee counterbalanced the decline in those of the Western states. The total value of the phosphate rock sold or used in 1950 rose to $59,027,848, slightly more than $7,600,000 above the 1949 level. The P$_2$O$_5$ content of the rock sold or used in 1950 increased to 3,336,112 long tons from 2,913,796 tons in 1949. This is a new record high.

The upward trend in the marketed production of Florida phosphate rock continued in 1950. By far the greater part of the production came from the land-pebble field. Tennessee remains the second-largest phosphate-rock-producing state. Total marketed production of the Western states fell considerably in 1950 from 1949. Phosphate rock was produced in all four states of the Western field—Idaho, Montana, Utah, and Wyoming—but there was a marked drop in Montana.

Imports increased both in quantity and value in 1950. Exports in 1950, as reported by producers, were likewise above those of 1949 in both categories. Apparent domestic consumption increased considerably in 1950, but stocks at the end of 1950 had increased greatly in all the producing areas.

Canada Cement Company, Ltd., Montreal, Quebec, Canada, reported a net profit of $4,804,648 for the fiscal year ended November 30, 1951, as compared with $5,206,516 for the previous fiscal year. Net profit in the common share was $5.88 against $6.52 the preceding year.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

WITH most of the major conventions of the year disposed of, the April, 1922, issue of PIT AND QUARRY was a normal one, with a well-balanced content of plant and operating articles and technical articles. The Hoover & Mason Phosphate Company was given prominent treatment on its comparatively new plant at Mt. Pleasant, Tenn. The really unique feature of this operation was the so-called "cantilever" used to load cars for the plant. At the pit up to 15 ft. of overburden was removed by two draglines. One of these also did most of the phosphate digging. In cleaning up the pit, buckets were filled by hand. These were then hoisted and dumped into a hopper on the machine, from which the material was discharged into cars. The machine was self-propelled on rails and had an 80-ft. overhang over the pit. The 12,000-ton capacity stockhouse for finished material was also unusual. It had a roof of steel truss construction which paralleled the slope of the piles. A skip car dumped dried phosphate from the center of the roof, and reclaiming was by gravity through a tunnel belt conveyor.

Another interesting article, by the late Frank M. Welch, described the improvement and expansion of the plant of the Atlas Sand, Gravel & Stone Company near Hartford, Conn. The reasons for the various changes made were explained.

The Gager Lime Company plant at Sherwood, Tenn., was also described in detail. This operation, started in 1892 by Byron Gager with two wood-burning kilns, had grown into a modern plant with a capacity of 275 tons in 24 hours. At that time underground mining had not yet started, and stone was quarried from the deposit 275 ft. above the plant. A gravity railway was used to lower the crushed stone to the plant. At that time there were 16 vertical kilns and a 60-ft. rotary kiln, in use and a 100-ft. kiln was on hand ready to be installed. Two batch hydrators and a continuous unit were used.

The one convention described was that of the Illinois Concrete Aggregate Association held in Springfield, Ill., on March 16, 1922. Among the speakers was a "Mr. Clemmer," then in charge of the testing laboratory of the Illinois Highway Department, who was probably H. F. Clemmer, later with the U. S. Bureau of Public Roads. Another speaker was the late Frank T. Sheets, then Illinois State Highway superintendent and later for many years president of the Portland Cement Association.

Among the many other articles was one which pointed out the superiority of concrete pavement over the brick pavements which were so popular at that time. Brick was shown to be not only obsolete for modern traffic but also more expensive after a few years' upkeep. How to reduce bad debts legally was also explained. Still another article pointed out the importance of knowing overhead costs in order to be sure of profitable operation. The importance of repair shops to plant operators was described in detail. An interesting controversy between portable contractor-operated and stationary commercial sand-and-gravel plants was continued from an earlier issue.

In the news was an item on the passing of Captain Dan Donnelly, 78, founder and president of the Ohio Gravel Ballast Company, Cincinnati. He was known as the "Gravel King" because he was one of the first in the Middle West to recognize the importance of gravel as an aggregate and also one of the first to produce a washed and graded product. He was the father of Harry Donnelly, first president of the National Association of Sand Gravel Producers.

Another item told of the dismantling by the Pacific Portland Cement Company of its plant at Napa Junction, Calif., due to the high cost of property. The plant was to be re-established at another location. The erection of new plants by the Rock Island Sand & Gravel Company, at Rock Island, Ill., and the Pennsylvania Glass Sand Company, at Kermit, Va., was announced.

Study of Kansas Limestone Shows Possible New Uses

Some High-Calcium Limestone in Kansas, a publication of the Kansas Geological Survey prepared by Russell T. Runnels, is based upon a study made in response to the growing need of many industries in the state and those adjacent to Kansas for high-calcium limestone from local sources. The aim of the study was to analyze specifications required by certain Midwestern industries.

High-calcium limestone is required in the manufacture of many chemical and industrial products, in the metallurgical industry as a flux for iron and steel production, in glass and glass-fiber manufacture, and as a raw material for lime.

Conclusions presented by certain publications show that limestones tested from deposits in Anderson, Cherokee, Franklin, and Leavenworth counties meet all the chemical specifications for various uses as high-calcium limestones. Samples from Chase, Clay, Crawford, Linn, Miami, Neosho, and Wyandotte counties have above average purity and can meet (or be processed to meet) specifications for lime and blast furnace flux.

Rejected Gravel Salvaged By Laboratory Service

According to the *A. C. C. L. Bulletin*, a publication of the American Council of Commercial Laboratories, Inc., Washington, D. C., a gravel producer in a southern state recently salvaged 13 carloads of gravel which had been rejected by an engineer at a buyer's plant. Tests had proved that the gravel was too fine to meet specifications.

At the suggestion of the A. C. C. L. staff, the rejected material was stockpiled separately. The coarse gravel, when mixed with the separate material met specifications. Actual savings to the producer was estimated at about $1,300.

This crushing plant near Boulder, Colo., is operated by the Winslow Construction Company. The operation supplies 600 to 700 tons of sand cushion material daily to the Kooler Construction Company of Denver, paving contractors on the four-lane Denver-Boulder turnpike. Plant equipment consists of an International TD-18A crawler tractor and bulldozer which pushes raw rock to a 1-cu. yd. Lima dragline. The dragline feeds a Cedarapids crushing plant, powered by a 125 hp. International UD-18A diesel engine; and the finished material is handled either by a Pettibone-Mulliken loader which fills the haul trucks or is pushed by the TD-18A to a large stockpile nearby.

Production Rises Sharply For Roofing Granules in 1950

The production of roofing granules in 1950, as reported by producers to the U.S. Bureau of Mines, amounted to 1,797,729 short tons, valued at $26,852,848—an increase of 33 percent in quantity and 34 percent in value, as compared with 1949. The total production was the largest on record, and the total average value showed an increase of 19 cents a short ton over 1949, a record value.

Production of natural granules increased 39 percent, and the artificially-colored 32 percent, while brick granules decreased 42 percent. The average value for natural granules increased 5 cents to $8.80; artificially colored, 35 cents to $17.21; and brick, $2.19 to $19.31.

Talc, Pyrophyllite, Soapstone Show Rising Trend in 1950

Marked increases occurred in 1950 in the mine production of talc, pyrophyllite, and ground soapstone, and in quantity and value of these commodities sold or used, over similar data for 1949, according to reports by producers to the U. S. Bureau of Mines. Total imports were also much higher both in quantity and value in 1950 than in 1949. Exports of crude and ground talc, steatite, soapstone, and pyrophyllite were also considerably greater in quantity and value.

In 1950 New York was still the leading producer by a large margin. North Carolina was second, and California third, as in 1949. Sales in all the listed states except Nevada were higher in 1950 than in 1949. Sales of pyrophyllite, most of which comes from North Carolina, increased in 1950 over 1949.

Erie Sand and Gravel Co. Vessel Uses Radar to Find Dredging Areas

THE Erie Sand and Gravel Company, Erie, Pa., has for several years been using radar equipment in its dredging operations. An MN1 radar set, manufactured by the General Electric Co., was installed on the Erie company's vessel, the *M/V Joseph S. Scobell*, in 1947 to locate dredging areas in fog or during periods of low visibility.

Dredging areas are carefully marked by anchored buoys, which may be detected by the vessel's radar equipment. Besides locating dredging areas, the equipment is very useful for navigation and anti-collision purposes, and in determining the vessel's actual distance off shore.

The G-E electronic navigator, which operates without being affected by static or interference from a ship's electrical equipment, consists of these units: an ultra-high frequency transmitter and receiving unit; a rotating antenna; and, if required, a separate power supply.

The transmitter intermittently produces radio energy at high rates. These pulses of power are fed to a highly directive antenna mounted topside. Rotating 360 degrees in azimuth at 11 r.p.m., this antenna beams radio micro-waves in a fan shape 3½ degrees wide and 6½ degrees above and below horizontal—right out to the horizon. Solid objects within this narrow path act as a radio "scoreboard" to reflect the transmitted radio energy back to the antenna, where it is electronically transferred to the receiver between transmitter pulses for amplificatjon and visual interpretation. Presence of an object is indicated by a bright spot of light on the large viewing screen. Direction of the object is indicated by the position of the antenna at the instant the object is "seen". Range or distance is determined by electronically measuring the time interval between the transmitted pulse and the pulse "echo".

The edge of the electronic navigator screen is calibrated in degrees. A movable and transparent cursor over the screen makes it easy to determine bearings relative to landmarks and distant objects at any time. Fixed electronic marker circles on the face of the screen indicate the distance of objects from the ship on which the navigator is installed. By means of a range switch, these markers are calibrated in three ranges—2, 6, and 30 miles. On the 2-mi. scale two markers represent 1 and 2 miles, reading from center. On the 6-mi. scale three markers represent 2, 4, and 6-mi.; and on the 30-mi. scale, 10, 20, and 30-mi. Range objects can be estimated accurately between range marker lines.

The *Scobell* is also equipped with an automatic dial-operated marine radio-telephone, manufactured by The Lorain County Radio Corporation of Lorain, O. This instrument provides the vessel with direct communication to the Erie office through the shore station at Lorain. It is also very helpful as a safety device in providing communication to other ships.

The Erie Sand and Gravel Corporation, a very progressive concern, has provided its vessels with other electronic aids, such as the radio direction finder, depth sounder, and gyro compass.

• Radar antenna installation on the "M/V Joseph S. Scobell".

• Captain Fred Mastine at the receiver, which indicates the findings of the radar.

• Carroll Peabody and Paul Romoser, radar installation engineers, Lorain County Radio Corp., beside a radar reflector buoy used in marking a dredging location.

El Salvador's First Cement Plant Nears Completion

By CLYDE A. MOSER
General Superintendent
Cemento de El Salvador, S. A.

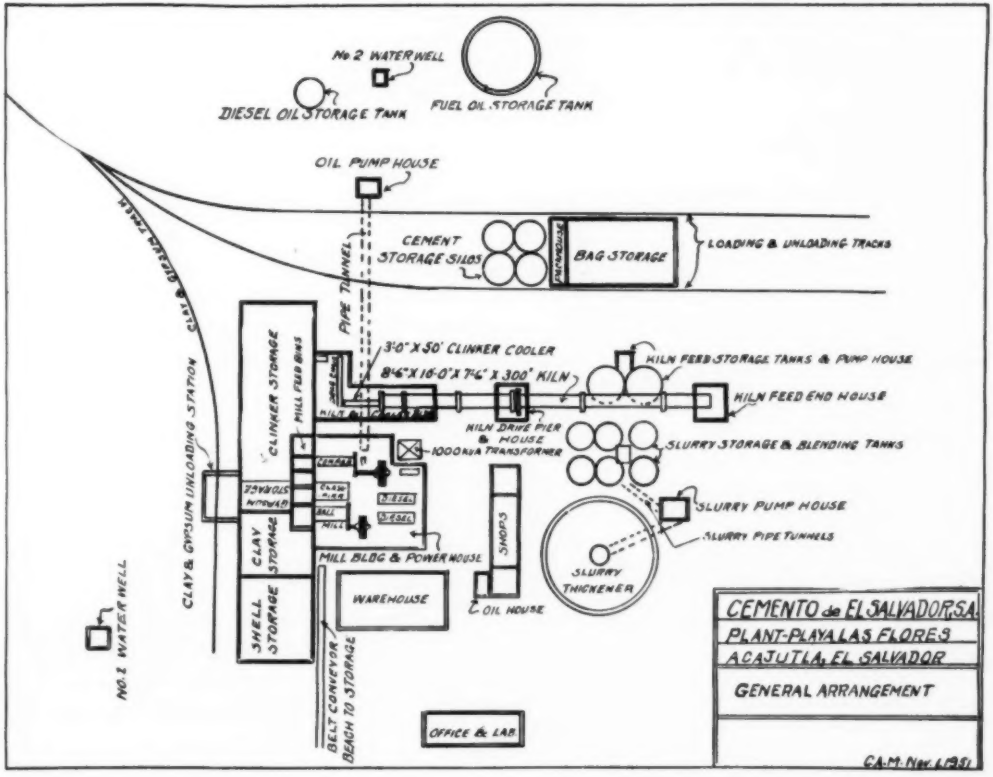
Raw materials consist of marine shell, volcanic pumice, and sand

THE dreams and ambitions entertained by private interests of certain El Salvadorians through a period of many years has finally been realized by the organization of a company known as Cemento de El Salvador, S.A., and the construction of an 1,800-barrel-per-day cement plant located at Playa Las Flores, Acajutla, El Salvador, Central America. A contract was signed with Allis-Chalmers Manufacturing Company, Milwaukee, Wis., to furnish all of the cement-making machinery and equipment. Macdonald Engineering Company of Chicago, was given the contract to construct the plant and erect the machinery and equipment. Construction will be completed in a few months.

Raw Materials Basic materials consist of marine shell having a calcium carbonate content averaging 84 percent and a volcanic formation of pumice and sand having a content of 68 percent silica and 15 percent alumina.

The marine shell life originates at several large coral reefs located about two miles off the coast. The shells are carried over and through many volcanic rock formations by the water before reaching the shore. When the shell material finally arrives on the beaches, it is broken and ground to the extent that 100 percent passes a 3/8-in. screen and 99.5 percent passes a 4-mesh screen. No primary or secondary crushing is necessary.

The material taken from the beaches and coves is handled by a 1½-cu. yd. P & H diesel-driven, crawler type, clamshell crane, which deposits it in a traveling hopper mounted on railroad rails and equipped with a self-contained Jeffrey belt feeder for regulating the discharge. The hopper and belt feeder is located directly over a Jeffrey portable 24-in. by 200-ft. belt conveyor driven by a 7½ hp., 155 r.p.m. gearmotor. This belt conveyor discharges the material onto a Jeffrey 24-in. by 660-ft. inclined belt conveyor driven by a 30 hp., 155 r.p.m. gearmotor and is set at right angles to the 200-ft. conveyor. The 660-ft. conveyor discharges onto 24-in by 150-ft. belt conveyor driven by a 7½ hp., 155



r.p.m. gearmotor. This conveyor is equipped with a Jeffrey tripper to distribute the shell material into and along the raw storage building, also into the mill feed bins.

The volcanic pumice and sand deposit is located at Las Tres Ceibas, about 53 kilometers from the plant site and adjacent to the El Salvador Railroad. This material is loaded on railroad cars with a ¾-cu. yd. Bucyrus-Erie 22-B, diesel-driven, crawler type shovel. The loaded cars are transported by railroad to the plant site, where the material is unloaded into a steel hopper and from there conveyed to the clay storage bin by a 24-in. by 15-ft. Barber-Greene belt conveyor driven by a 3 hp. motor. The pumice and sand can also be unloaded into a track hopper, which feeds an Allis-Chalmers No. 3 Pulverator driven by a 50 hp. motor. The crushed material is then taken to the clay storage by a Jeffrey 12-in. by 36-ft. Type VC-1263-L bucket elevator driven by a 3 hp. gearmotor. Primarily the Pulverator and elevator are used for crushing and handling incoming gypsum. The elevator is, however, equipped with a double discharge chute for discharging material either into the gypsum or clay storage bins.

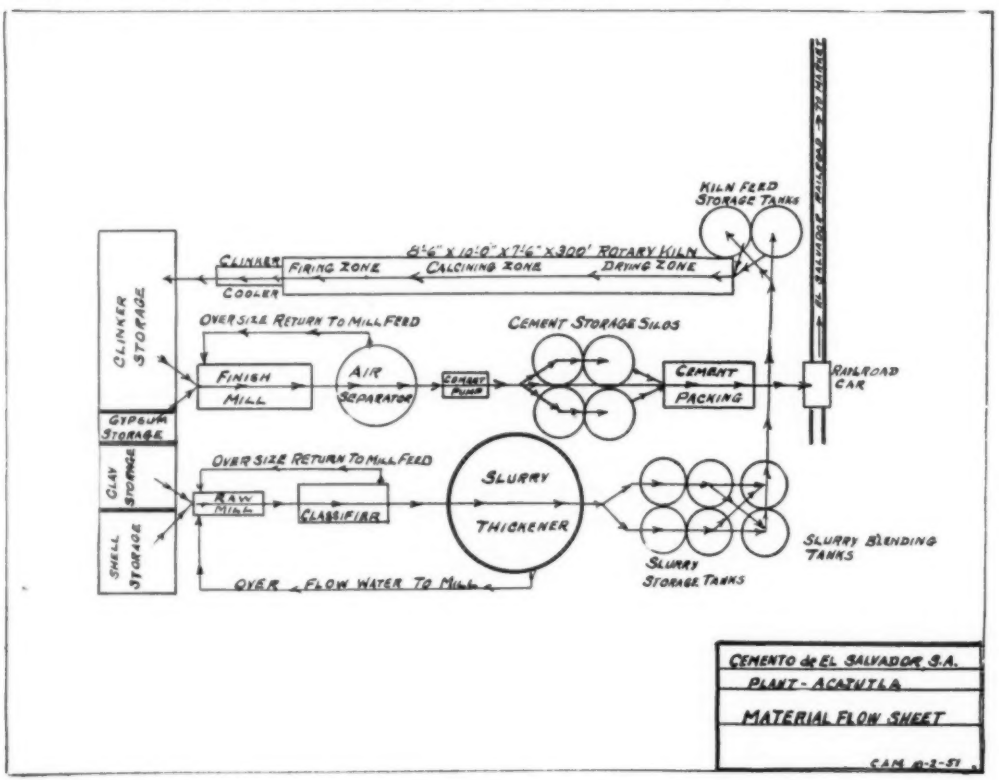
Gypsum deposits have been located in El Salvador, but present indications are that these do not contain sufficient gypsum to meet our requirements. Initial supply will probably be purchased from outside sources.

Raw Storage The raw material storage building is 72 ft. wide and 320 ft. long and is designed to store 7,875 tons of shell material, 3,800 tons of clay material, 2,000 tons of gypsum, and 83,000 barrels of clinker. The building is of reinforced concrete and structural steel design. Due to very heavy rains during the six months rainy season the building is fully enclosed, except the part which houses the shell material.

The crane runway is equipped with a P & H 6½-ton capacity, electrically operated, traveling crane having a 2½-cu. yd. clamshell bucket. This crane distributes material and places the various materials in the mill feed bins, which are located in the storage building beside the grinding departments.

Raw Grinding An Allis-Chalmers 9- by 13-ft. Preliminator is fed by two 24-in. by 8-ft. proportioning feeders, one feeding shell material and the other feeding pumice and sand. An extra feed bin is provided for storage of high siliceous materials which can be used for quick correction of the slurry composition if so desired. The Preliminator is driven by a 500 hp. synchronous, 200 r.p.m. motor connected to a countershaft equipped with a Falk flexible coupling and a type 48-35 DL magnetic clutch. Sealed oil ring bearings are used. The main trunnions are equipped with a high-pressure lubricating system to facilitate easy starting of the Preliminator.

The Preliminator operates in closed circuit with a 12- by 36-ft. Dorr classifier. Oversized material is returned to the mill feed. Two (one spare) Allis-Chalmers 6- by 8-in. Type CWG slurry pumps convey the classified material to 100- by 16-ft. Dorr thickener used for thickening the slurry. The overflow water is returned to the Preliminator and classifier by two (one spare) 6- by 8-in. Type CWG Allis-Chalmers slurry pumps.



The thickened slurry is drawn from the thickener by gravity and two (one spare) No. 6 VM Dorrco diaphragm pumps which discharge into a sump. Two (one spare) 3-in. Wilfley centrifugal sand pumps transport and distribute the slurry to either one of four 22-ft. dia. by 20-ft. high concrete slurry tanks. Three (one spare) 5-in. Wilfley centrifugal sand pumps are used for recirculating the slurry in the slurry storage tanks, pumping to two 22-ft. dia. by 20-ft. high slurry blending tanks or to two 28-ft. dia. by 15-ft. high concrete kiln feed storage tanks.

The slurry storage and blending tanks are equipped with Allis-Chalmers propeller-type mechanical agitators. Supplemental air agitation is also provided. The kiln feed storage tanks are equipped with Minogue mechanical and air agitators. A PB4, 229 c.f.m., Chicago Pneumatic Tool Company air compressor, provides air for slurry agitation. All valves used in the slurry lines are of the lubricated plug type.

Two (one spare) 3-in. Wilfley centrifugal sand pumps transport the slurry from the kiln feed storage tanks to an Allis-Chalmers ferris-wheel-type feeder. Overflow returns by gravity to the kiln feed tanks.

Burning and Cooling An Allis-Chalmers 8-ft. 6-in. by 10-ft. by 7-ft. 6-in. by 300-ft. rotary kiln, having a daily capacity of 900 barrels is a part of the initial installation. The kiln is equipped with a chain system 56 ft. long to effect fuel economy and efficiency.

The kiln is supported on five carrying mechanisms and driven by a 50/60 hp. 500/1,500 r.p.m./d.-c. motor through a Jones No. 120 SHS herringbone gear speed reducer. A Falk flexible coupling is mounted on the slow speed shaft between the speed reducer and the kiln drive pinion. Nose ring castings are of the Allis-Chalmers air-cooled type. Cooling air is furnished by the cooler fan.

The Allis-Chalmers ferris-wheel-type feeder is driven by a variable speed d.-c. motor, synchronized with the kiln speed. The amount of feed is regulated by a mechanically operated Vari-Pitch speed changer.

Kiln draft is provided by a high temperature Sturtevant No. 90 induced draft fan equipped with a 3-ft. 6-in. dia. by 31-ft. 11-in. steel stack. The kiln feed end is also equipped with a hopper type dust collector.

The burning equipment is of the latest Allis-Chalmers design. Bunker C fuel oil is used for kiln burning. This oil is supplied from 83,000-bbl. storage tanks located at Acajutla, about 3.5 kilometers from the plant site. It is brought to the plant site in railroad tank cars and unloaded into a 550,000-gallon storage tank at the plant.

The kiln cubicle is equipped with the latest design and type of instruments as an aid to the kiln burners.

The clinker, upon leaving the kiln, passes through an Allis-Chalmers 3- by 50-ft. air quenching cooler driven by a 7½ hp. motor. The Sturtevant fan which provides air for cooling the clinker is driven by a 30 hp. motor with Texrope drive. A Sturtevant fan provides primary air and the hot air recovered from the air quenching cooler provides secondary air for combustion.

After the clinker leaves the cooler, it can be spouted directly over the clinker storage wall or handled by a Jeffrey 16-in. by 52-ft. drag chain conveyor driven by a 5 hp. 30 r.p.m. gearmotor. The drag chain takes the clinker away from the cooler and discharges directly into an Allis-Chalmers No. 322 Type R clinker crusher driven by a 25 hp. 1,800 r.p.m. motor. The crushed clinker after leaving the crusher, goes to either one of two (one spare) Jeffrey 42-ft. 6-in. Type VC-1263-L bucket elevator, which in turn discharges directly over the clinker storage wall, or the elevator can discharge upon a 24-in. by 100-ft. Jeffrey belt conveyor equipped with a Model E 24-in. belt Weightometer installed for the purpose of weighing clinker to check kiln production. This belt conveyor discharges either into the mill feed bins or into the clinker storage.

Finish Grinding Two 24-in by 8-ft. proportioning feeders deliver clinker and gypsum to an Allis-Chalmers 8- by 29-ft. Compeb mill driven by a 800 hp. 180 r.p.m. synchronous motor connected to a countershaft equipped with a Falk flexible coupling and a 60-38 Type DL magnetic clutch. Like the preliminator, all countershaft bearings are of the sealed oil ring type and the Compeb mill main trunnions are equipped with a high-pressure lubricating system to facilitate easy starting.

A Sturtevant 16-ft. dia. air separator is used in connection with the Compeb mill for closed circuit grinding; it is driven by a 100 hp., 1,200 r.p.m. motor with a Texrope drive. Finish grinding machinery and cement-handling equipment is connected to a No. 28 Type 360 Sly dust collector.

A 74-ft. 4-in. Type VC-1886-L Jeffrey bucket elevator driven by a 15 hp., 56 r.p.m. gearmotor takes the cement from the Compeb mill discharge to the air separator. Finished cement from the air separator or Compeb mill discharge flows by gravity into a Type H-4 Fuller-Kinyon cement pump driven by a 40 hp. 1,200 r.p.m. motor. The cement pump transports the cement through a 5-in. pipeline to one of four 26- by 80-ft. concrete storage silos or to an interstice bin.

Packing Cement is drawn from the conical hopper bottoms of the silos by Fuller-Huron Airslides which discharge into either of two 16-in by 43-ft. 4-in. Jeffrey screw conveyors. A 16-in. by 29-ft. cross screw conveyor takes the cement to a Jeffrey 49-ft. 2½-in. VC-1483-L bucket elevator, which discharges into a Jeffrey 24-in by 12-in. screening spiral conveyor located directly over the packer feed bin.

Packing is done with a St. Regis 4-tube No. 107FC packing machine, driven by a 30 hp. 1,800 r.p.m. motor. The feed bin is equipped with a surge bin and a bin feeder driven by a 3 hp., 30 r.p.m. gearmotor. The feed bin is also equipped with a Fuller bin level indicator.

A 30-in. reversible belt conveyor takes the packaged cement to loading aprons on either side of the packhouse, and from this point the bags are hand-trucked into railroad cars: Two of the cement storage silos are equipped with outside chutes for bulk loading.

All cement-handling machinery and equipment is connected to a No. 28 Type 360 Sly dust collector.

Power Power for plant operation is supplied by two 720 hp. General Motors diesel engines, each driving a 500 kw. Allis-Chalmers generator delivering 440-V. current. Additional power is also purchased from a local power company.

The cement company erected a 34.5-kv. power transmission line from the plant site to source of power supply, a distance of approximately 30 kilometers. 40- and 65-ft. concrete poles, manufactured by the cement company, were used through the level part of the terrain, and 45-ft. wooden poles through the mountainous section.

Diesel oil will be delivered to the plant either by truck or railroad and stored into a 110,000-gal. steel tank.

An Allis-Chalmers 1,000-kv.-a. transformer will convert the 35,000-volt incoming power to the 440 volts

(*Continued on page 89*)

A. I. M. E. Industrial Minerals Division Features Sulphur at New York Meeting

M. F. Goudge, Canadian vice-chairman of A.I.M.E.

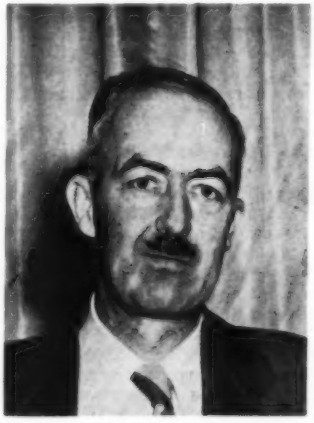
another ON THE SPOT report

MORE than 2,000 engineers and scientists from the United States, Canada, and abroad attended the 173rd General Meeting of the American Institute of Mining and Metallurgical Engineers at the Hotel Statler in New York City on February 18 to 21, 1952. The meeting was crowded with technical sessions, committee meetings and various social and special events. President Willis McGerald Peirce presided at the welcoming luncheon on Monday and introduced the incoming president, M. L. Haider, to the gathering.

One of the highlights of the convention was the session of the Industrial Minerals Division devoted to sulphur and sulphuric acid, at which four papers were presented.

The first of these papers, entitled *Economic Aspects of Sulphuric Acid Manufacture* was presented by W. P. Jones, Chemical Construction Corporation. The author discussed the various sources of acid available to industry, including native sulphur, pyrites, sour natural gas, oil- refinery gases, metallurgical gases, spent acid, gypsum, and anhydrite. Mr. Jones stated that the largest single factor in any decision regarding the raw material for sulphuric acid is its initial cost and availability, and that therefore transportation costs play a very important part in the decision. He said that at the present price of native sulphur, acid can be produced more economically from such materials as zinc roaster gas, spent acids, and hydrogen sulphide gas when these are available at little or no cost, than from sulphur, and that any further increase in the price of sulphur would force more and more acid manufacturers to consider other raw materials.

An important new development in obtaining underground sulphur which will help overcome the current sulphur shortage was made public for the first time in the paper on *Development and Operation of Sulphur Deposits in the Lousiana Marshes* by Z. W. Bartlett, C. O. Lee, and R. H. Feierabend, all of the Freeport Sulphur Company. Mr. Bartlett, assistant general manager of that company, who presented the paper, told of the successful culmination of eight years of research by Freeport into the development of a process permitting the use of sea water instead of fresh water for the underground mining of sulphur. A very large supply of suitable water is a fundamental requisite of the Frasch hot-water mining process, by which most of the brimstone production of the United States is obtained. At the Grande Ecaille mine for instance 6,470, 000 gallons per day are required. At the newly discovered sulphur deposits under the Louisiana Gulf Coast marshes an adequate supply of fresh water poses great problems, and at the Bay Ste. Elaine deposit the nearest source is 35 miles distant. Costs of developing this deposit would have been prohibitive if the new method of using sea water had not been developed.



Dr. Ian Campbell

The scaling problems encountered when sea water is heated have been overcome, not by removing the calcium and magnesium salts by chemical treatment, but by the development of a process and equipment for heating the water in such a way that the decomposition of bicarbonates is minimized and, through proper controls, the deposition of calcium sulphate scale is prevented. The corrosive action of sea water has been overcome by the removal of oxygen in an apparatus consisting of a packed tower in which cold sea water flows downward. In the upper part the water is in contact with flue gases discharged from the boilers, and in the lower part with the products of combustion of natural gas burned directly into the tower. The new process will not be preferred where fresh water is available because the operating costs are expected to be greater than those of treating fresh water, although the initial plant cost is less.

Other innovations planned at the Bay Ste. Elaine deposit include mounting the water-heating plant on a huge barge and using barges instead of pipes to transport the liquid sulphur to the storage area at Port Sulphur, 75 miles from Bay Ste. Elaine. The transportation of large quantities of a crude nonmetallic mineral in molten form by barge is unique. The barges are 224 ft. long and 8 ft. 5 in. in depth, with a 39-ft. beam. When loaded with 1,000 tons of liquid sulphur, they will have a draft of 6½ ft. Insulation will prevent heat loss and keep the sulphur molten during transportation.

A progress report on the study of *New York State Pyrite Deposits as a Source of Sulphur* was given by John J. Prucha of the New York State Science Service. The study was motivated by the present and apparently continuing sulphur shortage. Of the 19 known occurrences of pyrite in a belt of Precambrian gneiss 35 miles long by 3 or 4 miles wide northeast

of Antwerp, three were worked for pyrite from 1883 to 1920. Work was stopped not because of exhaustion of the deposits but because brimstone from the Gulf Coast became readily available and makers of sulphuric acid preferred it. Mapping and sampling of seven of the New York deposits now has been completed. All have a sulphur content in excess of 20 percent, and the richest has a content of 35.6 percent. The weighted average sulphur content of the seven deposits is 26.2 percent. Core drilling is necessary to prove the tonnage available.

A New Process for Sulphur Recovery from Lowgrade Surface Deposits was described by Thomas P. Forbath, Chemical Construction Corporation. These deposits, found in Italy, South America, and the western part of the United States, may have the same sulphur content as the underground deposits of Louisiana and Texas, but present recovery methods from them are inefficient, and the sulphur is often mixed with impurities. The new Chemico process, said Mr. Forbath, permits recovery of more than 90 percent of the sulphur in a pure form at a cost competitive with the present price of sulphur. A plant to use the process is under construction in Colombia. In this method the ore is wet-ground to minus 28-mesh, made into a slurry with water, and pumped to a gangue separator which is kept under pressure with live steam. The sulphur meets and in part agglomerates into droplets. The charge is then cooled and passed to a 20-mesh vibrating screen which separates the agglomerated sulphur particles from the slurry and delivers them to a melting pit. The slurry is fed to flotation cells, where most of its sulphur content is floated off. The flotation concentrate is dewatered and fed to the melting pit. Molten sulphur from this pit is passed to a pressure type sulphur filter from which it emerges as the final product.

Technical sessions were also held at which papers of particular interest to the portland cement and lime industries were presented. Among these was the paper by C. C. Van Zandt of the Lone Star Cement Corporation entitled *Design and Construction of Lone Star's New Cement Plants*, which described the two new dry-process plants now in operation at Lone Star, Va., and at Maryneal, Tex. Each plant has two rotary kilns, a capacity of 1,500,000 bbl. per year, and cost $10,500,000 ($7 per barrel of annual capacity). The dry process was chosen for these plants, said Mr. Van Zandt, because (1) the raw materials are particularly suitable and can be dried very readily; (2)

M. L. Haider, new president of A.I.M.E.

the Maryneal plant has no water available for slurry; (3) very substantial kiln fuel savings can be obtained; and (4) dry raw grinding reduces ball and liner wear and general maintenance without any sacrifice in power. Operating costs to date have more than justified the choice of the dry process for these two plants. The buildings are constructed of reinforced concrete, including the two continuous barrel roofs, and the author stated that concrete construction results in a more attractive structure, free of vibration and remaining much cleaner than a fabricated steel structure. A feature of the Maryneal plant is the use of Corrulux translucent siding, which affords well-lighted building interiors during the daytime without artificial illumination. Data on quarrying, raw and clinker grinding, burning, and packaging were given. Fuel in the Virginia plant is coal and in Texas natural gas. Drag conveyors, which are often considered as outmoded equipment, are extensively used in both plants because of their cleanliness. The essential wearing parts of these conveyors are made of manganese steel, and maintenance is very moderate. Every machine, hopper, and silo in both plants is kept under suction, and the plants are remarkably clean throughout.

Leslie W. Austin, director of refractory research, Kaiser Aluminum & Chemical Corporation, in his paper *Periclase Refractories in Rotary Kilns*, described a new development in making kiln blocks for rotary cement kilns linings. These blocks, made of sea water periclase (91.5 percent MgO) and chromite, have a bond of crystalline forsterite formed in place by solid phase reaction between fine magnesia and "volatilized" silica. This "volatilized" silica consists of spherical particles averaging 1/6 micron in diameter. It is obtained as a by-product of ferrosilicon manufacture, or it may be made synthetically. It is mixed with the fine magnesia in close approximation to the forsterite ratio ($2\ MgO.SiO_2$) to form the bond, and to its extreme fineness is attributed the notable improvement obtained in bonding strength over that obtained by using ordinary silica flour.

In a paper on *Performance of Rotary Kilns at Forced Capacity*, B. R. Jacobsen of F. L. Smidth and Company stated that in order to cope with an unprecedented demand for cement during recent years the cement industry has forced rotary kilns far beyond their designated capacity. It has been the general experience that the forced kiln operation has resulted in considerably increased fuel consumption and has brought about serious dust problems and other difficulties. An example was given showing actual results in increased production cost attributable to forced kiln operation. It was also demonstrated that the savings to be made by installing additional kiln equipment and operating the kilns at their most economical capacity would, under average conditions, pay for the cost of the additional equipment within approximately two years.

Irving J. Warner of the Warner Company, in his address on *Thermodynamics of Lime Calcination*, presented data on temperature and heat requirements necessary for the calcination of lime. Particular attention was paid to the problems associated with the rotary kiln, but reference was also made to the characteristics of shaft kilns.

A description of the first application of the technique of fluo-solids roasting to the production of lime was given by F. S. White and E. Kinsella of the New England Lime Company in their paper, *Solids Fluidization Applied to Lime Burning*. The principle is applied in two ways

Irving J. Warner, The Warner Company

B. R. Jacobsen, F. L. Smidth & Company

at the plant in Adams, Mass. Drying and sizing of the minus 6-mesh limestone is done in a single-stage reactor, and the actual calcining in a 5-stage reactor. The single-stage reactor removes all moisture from the feed and two-thirds of the fines, leaving about 7 percent in the feed to the main reactor. The drying is accomplished by burning 50 gallons of Bunker C fuel per 100 tons of feed.

In the 5-stage fluo-solids reactor the limestone is calcined very efficiently, and a superior grade of lime is produced. Maximum temperature is 1,860 deg. F. Fuel consumption is about 5 million B.t.u's. per ton of lime. The yield of lime, however, is only about 78 percent of theoretical, *versus* 90 percent in a rotary kiln and 100 percent in a shaft kiln. From a feed of 204 tons per 24 hours, 89 tons of lime is obtained. The authors stated that this method of making lime is of particular value in an area where fuel is expensive and limestone is cheap.

Industrial Gypsum in the Ceramic Industry was the subject of a paper by C. M. Lambe, United States Gypsum Company. He stated that the most important ceramic use of raw gypsum is as a batch ingredient in the manufacture of container glass. For this use the gypsum must have a low iron content, must be uniformly pure, and must be ground so that 100 percent passes a 20-mesh screen. Calcined gypsum is extensively used for ceramic plasters. The usual practice is to calcine the ground gypsum in kettles at temperatures up to 350 deg. F. and at atmospheric pressure. By calcining the gypsum in 2-in. lumps in an autoclave under steam pressure at a temperature of 250 deg. F., a modified product known as "Alpha" gypsum is obtained which has markedly different physical properties from gypsum calcined in the normal manner. The crystals of Alpha gypsum are large and dense; and owing to their low water absorption and to their smaller surface area, only about two-thirds as much water is required to produce a mix comparable in consistency with that of ordinary gypsum plaster. Both ordinary plasters and Alpha plasters are used for making block molds, case molds, and slip molds for the pottery industry. These plasters are also used in the plate glass industry to hold the glass sheet to the table during grinding and polishing, in the manufacture of low-density insulating refractories to give better green strength to the unfired shape, and also in various ceramic industries to make patterns and models.

Many other papers having to do with the geology, mining, and production of a wide range of industrial minerals were also presented.

At the business session of the Industrial Minerals Division, with Dr. A. B. Cummins, chairman, presiding, the incoming chairman, Dr. Ian Campbell, was introduced. Also presented were the following: Robert C. Stephenson, Eastern vice-chairman; Allen E. Cole, Southeastern vice-chairman; M. F. Goudge, Canadian vice-chairman; David P. Hale Jr., Rocky Mountain vice-chairman; and G. H. Waterman, Western vice-chairman.

Dragon's New Kiln Promises 1,800,000-Bbl. Annual Output

At Thomaston, Me., progress on the construction of the Dragon Cement Company's new rotary kiln is reported satisfactory. The installation will give the Thomaston plant a potential output of 1,800,000 bbl. of portland cement per year, an increase of 600,000 bbl. over the current capacity. Dimensions of the kiln are 11 ft. in diameter by 356 ft. in length.

Company directors have declared a regular quarterly dividend of 40 cents a share payable March 10, 1952, to stockholders of record at the close of business March 1, 1952. This compares with regular quarterly dividends of 25 cents a share declared and paid in 1951.

Film on Rod Action Shown At A.I.M.E. Division Meeting

A new silent 16 mm. Allis-Chalmers film, *Rod Action in a Rod Mill at Different Speeds*, was given its first showing on February 20 at the Statler Hotel in New York before the Minerals Beneficiation Division of the American Institute of Mining & Metallurgical Engineers.

The motion picture, filmed in Allis-Chalmers process laboratory, demonstrates in slow motion the rod action in a 30-in. by 8-ft. rod mill. The mill was operated at seven different percentages of critical speed.

Running time of the movie is 30 minutes. It is available for showing before interested technical and engineering groups, upon request to Allis-Chalmers Manufacturing Co., Advertising and Industrial Press Dept., General Machinery Division.

The Michigan Limestone and Chemical Company, Detroit, Mich., a subsidiary of the U. S. Steel Corporation, has announced plans to close its New Castle, Pa., offices. Irvin L. Clymer, president of the Michigan firm, stated that the decision is part of the company's program to consolidate activities wherever possible.

A fire at the mica processing plant of the United Feldspar and Minerals Corporation near Spruce Pine, N. C., on January 8 caused damage estimated at $500,000. Ed Scott, company treasurer, stated that firemen were hampered by a lack of water and could not use chemicals.

Mexico, with a production of 1,500,000 metric tons, climbed to fourth place in world cement production in 1951, according to an announcement by the Mexico Department of National Economy. Production for 1952 is expected to reach 2,000,000 metric tons.

Tax Liability
In the Sale of a Business

By Harold J. Ashe
Tax Counselor

CONTRARY to popular belief, the purchaser of a business is personally liable for various taxes incurred or collected by the seller, if the latter fails to discharge these obligations and such oversight is not caught in escrow. In buying out a competitor, this needs watching. Going through escrow or publishing a notice of intended sale will not give the new owner clear title to a business as far as the previous owner's tax liabilities are concerned.

It appears that various government taxing units and departments are not obliged to take official cognizance of notices of intention to sell. Neither are they required to follow such transactions or ferret them out with a view to protecting government tax claims before the sales are consummated. The significant point in this is that the government, state or federal, looks to the business, as distinct from the owner who incurred the tax obligations, if this becomes necessary to effect easy collection.

The foregoing position is well known in respect to property taxes and explains the use of responsible escrow agencies skilled in handling property tax delinquencies before a sale is completed. What probably not one businessman in a hundred knows is that the purchaser of a business is liable for sales taxes, social security, and unemployment insurance taxes collected and unremitted by the seller, as well as income tax withholdings collected by the seller. And in addition the new owner is liable for the seller's share of the contribution to social security and unemployment insurance taxes.

The only safe course for a buyer to take in protecting himself against such tax bills incurred by his predecessor is to demand evidence that such payments have been made. Moreover, evidence should be scrutinized carefully to make certain that tax bills have been paid in full, right down to the moment the new owner takes possession. There is a considerable time lag between the period for which taxes are collected and the date of remitting.

At any given time any going business is likely to be holding unremitted tax funds in varying amounts ranging from a few dollars up into thousands of dollars.

As an example of the government view on this matter, the Unemployment Insurance Act of one large state provides that "unless a Certificate of Release of Buyer is issued by this Department, the purchaser of a business may become personally liable for any unpaid contributions, interest, and penalties owed by the seller. A Certificate of Release can be issued only after the seller has filed all required returns and paid all amounts of contributions, penalties, and interest due".

The Department advises that "the purchase money should not be disbursed until a Certificate of Release has been issued by this Department. Publishing a notice of intended sale will not relieve you of your obligation in this respect". This is general practice in other states.

In the case of a seller who is going broke, it may even be possible that delinquency in remitting such taxes is a contributing cause forcing him to dispose of his business and, perhaps, to an unwary buyer.

El Salvador's Cement Plant

(From page 85)

required by the plant. A 100-kw., 230-volt motor generator set will provide direct current for variable-speed motors and the synchronous tie.

An Allis-Chalmers rotary air compressor driven by a 60 hp., 1,200 r.p.m. motor will furnish air for the cement transport system. A 659 c.f.m Chicago Pneumatic Tool Co., air compressor driven by a 125 hp., 900 r.p.m. motor will furnish 100-lb. air for general use.

Auxiliary buildings include a 50- by 100-ft general warehouse; a fireproof 500,000-bag capacity storage for paper bags; a machine shop equipped to handle all normal repair work; a maintenance and electrical repair shop; a change house for employees; an office; a laboratory with modern equipment; a First Aid Station; two water pump houses; and an oil pump house.

The company also constructed 22 houses on the plant site as living quarters for plant administrators, supervisory staff and key operating personnel. A mess hall and a kitchen were also built.

Water for the plant is obtained from two 10-ft. dia. by 200-ft deep wells, each of which is equipped with a 350 g.p.m. Layne-Bowler deep well turbine pump. Two Allis-Chalmers 350 g.p.m. centrifugal booster pumps elevate the water to a 100,000-gal. redwood storage tank located above the cement storage silos at an elevation of 110 ft. above ground level. Fire hydrants have been installed at strategic points throughout the plant proper.

Before starting construction, the company purchased and installed an Allis-Chalmers 5-cu. yd. jaw crusher and vibrating screen plant for crushing the stone to be used as concrete aggregate. Beach sand was also available on the company's property.

In addition, two brick-making kilns were constructed and 250,000 building brick (3- by 6-in. by 12-in.) were made and used in the construction of plant auxiliary buildings.

The cement plant is serviced by a branch line of the El Salvador Railroad, which connects with the International Railroad of Central America through an interchange at San Salvador, the capital of El Salvador. The company also improved a road connecting the plant with the main highway from Acajutla to Sonsonate. The plant is located about 3.5 kilometers from the Port of Acajutla, which provides excellent facilities for export trade.

Construction of the plant is under the supervision of Carl J. Mohme, construction superintendent for the Macdonald Engineering Company, and Clyde A. Moser, representing the board of directors of the company.

Officers and operating executives include Jamie D. Hill, director-president; Tomas Regalado, director; Antonio Belismelis, director; Archie Baldocchi, director; Roberto Quinonez, director; Jose Antonio Rivera, legal adviser; H. W. Smith, general administrator; Clyde A. Moser, general superintendent; and Edward Chang, chief chemist.

Cassier Asbestos Corporation To Open New Canadian Plant

Canada's newest asbestos plant near the British Columbia-Yukon border will be opened by the Cassier Asbestos Corporation of Toronto, according to company officials. The deposits are located on a mountain between the 5,000- and 6,000-ft. level.

The company plans to build two mills, one to handle about 250 tons of raw material a day from higher-grade deposits, and the other to handle from 400 to 600 tons of normal-grade asbestos per day.

WASHINGTON NEWS LETTER

another P and Q exclusive

THERE are groups in Washington who are beginning to get concerned about the level to which taxes have risen. This is really a new trend. For the most part, Administration and Congressional leaders both gave lip service to the demands for tax reductions; but in the last analysis they felt that so long as business was good, there would be no serious complaint about taxes.

Two things happened recently to change the situation. (1) March, 1952, was the first time that the full impact of the succession of recent tax increases was felt fully. The large amount of additional taxes most people had to pay came as a great shock. In addition, corporation after corporation issued its annual report, showing increased income before taxes and reduced income after taxes. (2) The so-called tax scandals created serious resentment among honest taxpayers. Although the total tax evasion is probably small in comparison with the total amount of taxes collected, nevertheless there was a strong feeling that taxes would not have to be so high if everybody paid what he was supposed to pay.

It is hard to put your finger on it, but there seems to be a consensus of opinion around Washington that tax rates cannot rise any more. There are even some who think they have gone too far.

Particularly because the Administration will be called upon to defend itself in the next election, there will probably be a great deal of talk about what the money is being used for. This will be based principally on an analysis of the budget which the President presented to Congress recently.

The President's Budget

Although each year sees much heaving and hauling, loud speeches and breast beating, accusations and recriminations, history demonstrates that Congress generally appropriates just about the amount of money asked by the President and for just about the purposes he outlined. There are, of course, some dramatic exceptions, but, surprisingly, such exceptions often show Congress appropriating more rather than less money than the President asked for.

To make sense out of a budget

By S. HERBERT UNTERBERGER

request requires that it be reorganized. The requests are submitted in terms of the requirements of the particular government agencies because that is how they are acted upon by Congress. However, a particular function may be divided among many agencies. Full understanding requires a breakdown by function.

The budget for the fiscal year ending June 30, 1953, calls for expenditures of $85,400,000,000, an increase of $14,500,000,000 over 1952. By function, this budget breaks down as follows:

Function	Budget Expenditure (In Billions of Dollars)	
	Fiscal Year Ending June 30, 1953	June 30, 1952
Total	85 4	70 9
Total National Security Program	65 1	49 7
Military Services	51 2	39 8
International Security	10 8	7 2
Atomic Energy	1 8	1 7
Other	1 3	1 0
Other Expenditures	20 3	21 2
Veterans' services	4 2	5 2
Interest on debt	6 3	6 0
Social security	2 7	2 7
Trans. and comm	1 5	1 9
Natural resources	1 5	1 4
Agriculture	1 5	1 4
Housing	3	8
General government	1 5	1 4
Other	1 0	6

Expenditures for security purposes are planned to increase over $15,000,000,000. In 1952, they constitute 70 percent of total expenditures; in 1953, they may be expected to constitute over 75 percent of an even larger total expenditure.

Of the expenditure for national security, the largest part is for the military services, and the lion's share of that will go to building up the Air Force, which is scheduled to increase over 50 percent. The military and economic assistance programs to friendly nations constitute the next largest amount, and the atomic energy program runs a poor third.

With all the emphasis on atomic warfare, it is interesting to note the contrast in expenditure levels for various military purposes. Just operating the armed forces alone is expected to require $12,000,000,000 in 1953.

Operating the atomic energy program will cost less than $2,000,000,000.

The cost of programs other than military security is due to fall—from $21,000,000,000 in 1952 to $20,300,000,000 in 1953. Most of this decline comes in veterans' benefits. The next most substantial cut is in housing.

Increased Federal Expenditures and the Business Outlook

In general, increased government expenditures mean more business. This is likely to occur in 1953 as well. However, most of the funds will be spent on projects already under way.

There is very little in the budget for new projects. The President has talked about substantial expansion of the atomic energy program. This would require $5,000,000,000 to $6,000,000,000 which he has not yet asked for.

Even if the budget increase did not result in much new government business, it would virtually assure the continuation of business activity at its present level. In Washington, at least, any talk of a depression in the near future is regarded as just political propaganda.

For a long time, the economists here have pointed to the arsenal of measures which we have developed to fight depression. They point to bank deposit insurance, social security, unemployment compensation, farm price supports, and control over the money supply. They now have an additional weapon. They point out that our military establishment has become so large that $20,000,000,000 a year must be spent to maintain it. They contrast this with the highest appropriation for work relief during the depression, which was less than $6,000,000,000. Thus the political necessity for large military expenditures has been turned into an economic virtue.

American Mining Congress Plans Division Meeting-Show

Dates of the 1952 Metal and Nonmetallic Mineral Mining Convention and Exposition of the American Mining Congress have been announced—September 22-25. In charge of the program committee for the meeting is Otto Herres, vice-president, Combined Metals Reduction Company, Salt Lake City.

Sessions will be held at Denver, according to the announcement, which was released by Merrill E. Shoup, president, Golden Cycle Corporation, Colorado Springs, Colo., chairman of A.M.C.'s Western Division.

Cummins® Diesels
do so many jobs-so much better

Shovels, cranes, industrial locomotives

Drilling rigs, centrifugal pumps, generator sets

Buses and on-highway trucks

...because they're custom-built to fit the job

Earthmovers, logging yarders and loaders

Off-highway trucks, crawler tractors

Work boats, pleasure craft

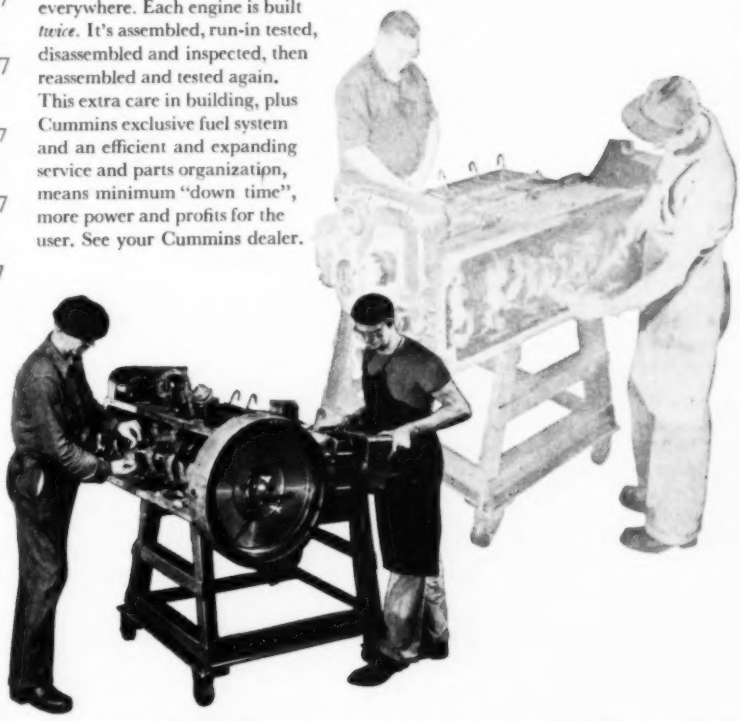
Lightweight, high-speed Diesels (50-550 hp) for these and many other uses

---

...because they're

BUILT NOT ONCE BUT TWICE

Rugged, lightweight, high-speed Cummins Diesels are at work everywhere. Each engine is built *twice*. It's assembled, run-in tested, disassembled and inspected, then reassembled and tested again. This extra care in building, plus Cummins exclusive fuel system and an efficient and expanding service and parts organization, means minimum "down time", more power and profits for the user. See your Cummins dealer.



CUMMINS Diesel

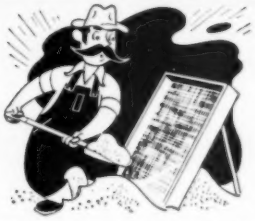
TRADEMARK REG. U. S. PAT. OFF.

Diesel power by CUMMINS

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

Export: Cummins Diesel Export Corporation • Columbus, Indiana, U.S.A. • Cable: Cumdiex

Screenings



by William M. Avery

WHILE we're still recovering from the chronic earache we acquired during a recent five weeks' siege of listening to convention speeches, we'd like to toss out one more little suggestion that might just possibly help to keep the interminable yackety-yackety under control. This scheme was tried out at a Red Cross meeting in Chicago not long ago, and we understand it worked fine. The speakers' dais was equipped with a life-size conventional "stop, caution, and go" traffic signal. When each speaker started to orate, the timing mechanism was started, giving him the green light for four minutes, the warning light for one minute, and the red light for as long thereafter as he continued.

There can be no assurance, of course, that so subtle a reminder would have much effect upon some of the windier orators we've listened to during the last few weeks. As a matter of fact, we're pretty sure it wouldn't, but the technique is susceptible of improvement. Personally we'd favor interlocking the visible signal with an air raid siren of generous proportions that would cause all hell to bust loose about 30 seconds after the red light came on. If this failed to silence the speaker, it could at least be depended upon to drown out the sound of his voice. Only serious flaw we can see in this scheme is that it would prevent a lot of folks, including us, from getting their quota of sleep during conventions, but that seems like a small price to pay.

The Hard Way

GEOLOGISTS Hunt for Sulphur Beds Amid Snow on Equator" says an item heading in the Chicago *Tribune*. When you find the snow, fellows, let us know and we'll give you a hand in locating the sulphur.

Almost a Brick Bat

George Katterjohn, genial president of Katterjohn Concrete Products, Inc., recently sent us a clipping of one of his ads which appeared in the *Arkansas Gazette*. (See cut.) George seems to think that the skeptical notation below his ad was just a happenstance, but it strikes us he should at least consider the possibility that the coincidence might have been arranged by the local brick interests.

Some Phewed!

THEY'VE been having quite a time with skunks out at the quarry which supplies stone for Lone Star's

new mill at Maryneal, Tex. Seems word spread among the little critters that comfortable winter-night accommodations could be had under the engine hoods of the company's diesel quarry trucks, and scores of them adopted the practice of moving in as soon as the units were parked at the end of the day.

ADVERTISEMENT

"Wild Stories From the Ozarks"

The company had no particular objection to providing flophouse facilities for polecats, but the customers were inclined to sleep late, and were often surly, if not downright quarrelsome, when the truck drivers tried to take over the premises in the morning. Whenever matters came to a head, the skunks somehow or another always managed to have the last word, and the drivers soon came to regard the dawn with even less enthusiasm than did their fur-bearing friends.

When our representative called at Maryneal recently to obtain a statement from the quarry superintendent, that gentleman, wearing a look of extreme anguish on his face, was digging a hole on the leeside of the quarry. "You can quote me," he shouted to our man, who had stopped some distance upwind, "as having said that the whole thing stinks!"

Cheese and All

JUST in case you had any notion of staking out a claim for mineral rights on the moon, you might as well forget about it. A blanket claim, accompanied by suitable maps, has been filed with the legal department of the United Nations by a group which calls itself the Elves', Gnomes', and Little Men's Science Fiction Chowder and Marching Society. Anyway, we're mighty glad to note that U. N. has at last found a sphere of influence in which it can maneuver decisively, as well as an organization with which it clearly has much in common.

Blind Alley

IN an all-out effort to make the members of the National Ready Mixed Concrete Association feel perfectly at home during their recent convention in Chicago, The Conrad Hilton Hotel created a special cocktail called "The Pulverizer." We had some difficulty in seeing any connection between the name of the cocktail and the ready-mixed-concrete industry; after drinking six or seven of the things we had some difficulty in seeing *anything*.

Clamshells, front-end loaders, conveyor-type bucket loaders, crawler mounted rigs — they're all outmoded on stockpile or windrow loading since the introduction of the new Athey HiLoader.

Announcing

THE NEW ATHEY FORCE-FEED

HiLoader

HERE'S WHY THE ATHEY HiLoader IS BETTER

HI-CAPACITY
10 yds. per min.

HI-FLEXIBILITY
Loads from any stockpile or windrow.

HI-MOBILITY
20 MPH

HI-LOADING
12' 10" Discharge Height

HI-SAVINGS
One Operator, Lower Maintenance

HI-COMFORT
Operators like it. They sit or stand and drive it like their automobile.

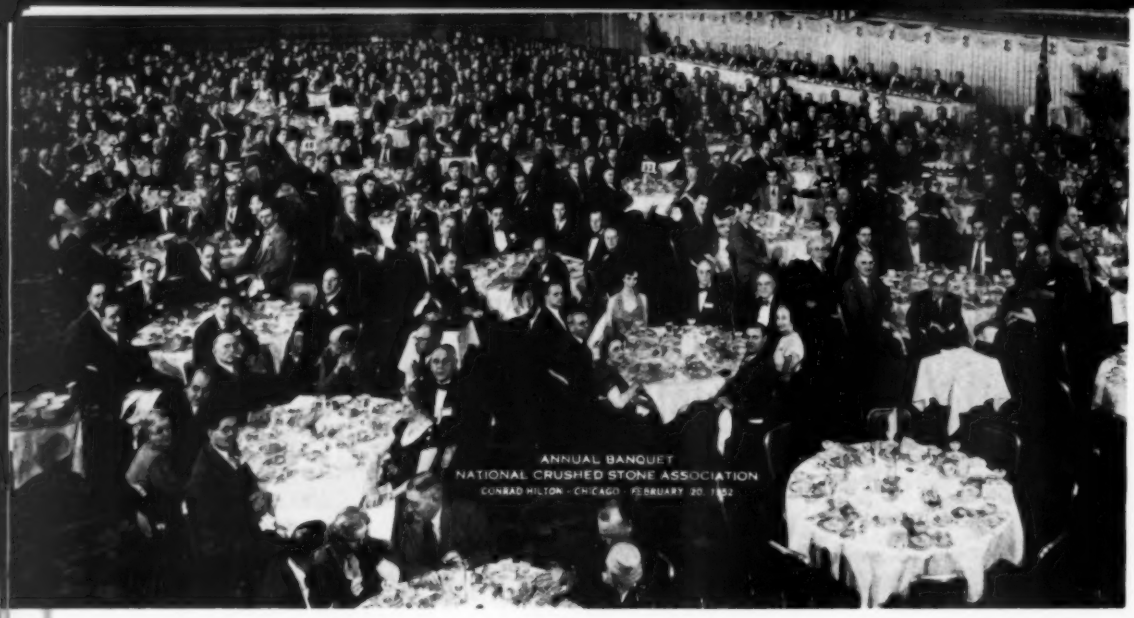
The New Athey HiLoader will boost your production, cut your costs and give you more savings. Designed for more efficient and faster loading from stockpile or windrow, the HiLoader is the result of four years of research, engineering and testing. It is a "field proved" machine backed by performance on scores of tough jobs in a variety of industries. See it in action. Prove to yourself this is your best answer to lower your increasing costs. See how the auger feeder, the discharge conveyor that can be swung 45° left or right, short wheelbase, cleated main conveyor, full-floating underslung paddle-blade feeder, large tires and simple controls all add up to the most practical loader in the field today.

For more complete information on this sensational machine, wire, phone or write:

ATHEY PRODUCTS CORPORATION
5631 West 65th Street, Chicago 38, Illinois

or see your Athey-"Caterpillar" distributor.

Athey FORCE-FEED **HiLoader**



35th N.C.S.A. Convention Breaks All Earlier Attendance Records

THE 35th annual convention of the National Crushed Stone Association, held at the Conrad Hilton (Stevens) Hotel on February 18, 19, and 20, 1952, was notable for many reasons, but chiefly because it broke, by a wide margin, all previous attendance records. The total attendance of 1,435 compares to the 1950 total of 1,265, which was then the record for an exhibit year. These figures are the more remarkable because those of former years included attendance of the Agricultural Limestone Institute, N.C.S.A.'s former affiliate.

All who attended received a full measure for their time, trouble, and expense as this meeting was up to the high standards of former years in every respect. The program covered a wide range of subjects of current importance and interest to producers and had an outstanding list of speakers from both within and without the industry. Subjects discussed included sales methods, drilling and blasting practices, quarry safety, modern pavement design, wage and salary controls, practical application of percentage depletion, aggregate behavior, MRO and major capital additions, tailored price order, etc., in addition to the usual Association reports and business. Each subject was followed by a discussion or question-and-answer period which many producers used to advantage to get answers to their particular problems.

As can be seen from the above, operating problems were given considerable prominence, and the Manufacturers' Division exhibits were also featured. A full morning and an afternoon were set aside for inspection of these exhibits, which were also open at other times. The advance notices on the extent and quality of the exhibits must have had something to do with the record convention attendance, and the exhibitors were kept busy, especially during the official inspection periods. A total of 70 companies exhibited their products, cramming the huge exposition area.

Officers and Directors Horace C. Krause (Columbia Quarry Co., St. Louis, Mo.) was elected president of the National Crushed Stone Assn. for the coming

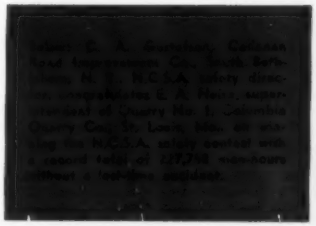
Outstanding program features industry and operating problems and exhibits

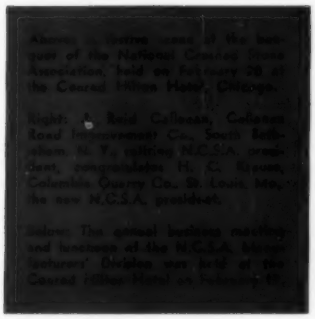
year. Re-elected treasurer without his usual protests was James Savage (Buffalo Crushed Stone Corp., Buffalo, N. Y.). Re-elected to the Association staff were the following: R. J. Boyd, administrative director; A. T. Goldbeck, engineering director; and J. E. Gray, field engineer.

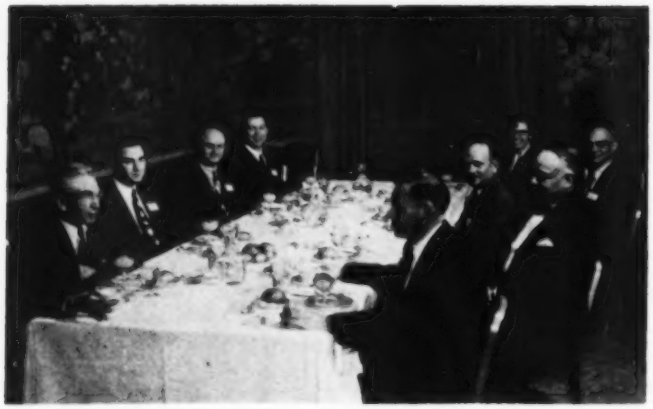
The new regional vice-president for the Northern Region is A. J. Cayia (Inland Lime & Stone Co., Manistique, Mich.). Otho M. Graves (General Crushed Stone Co., Easton, Pa.) was elected a member of the executive committee.

New members of the board of directors are as follows: O. C. Benson (General Crushed Stone Co., Easton, Pa.); J. Reid Callanan (Callanan Road Improvement Co., South Bethlehem, N. Y.); H. A. Clark (Consumers Company, Chicago); Arthur Goff (Wallace Stone Co., Bay Port, Mich.); Nelson Severinghaus (Consolidated Quarries Corp., Decatur, Ga.); J. A. Rigg (Acme Limestone Co., Fort Spring, W. Va.).

The Manufacturers' Division is represented on the board by the following members: Wayne W. King (W. S. Tyler Co., Cleveland, Ohio);







N.C.S.A. Accident Prevention Committee luncheon meeting. Left to right, around the table: J. J. Buffington, New York Trap Rock Corp.; Whit J. Wise, Southwest Stone Co.; H. F. Yotter, General Crushed Stone Co.; Bruce Woolpert, Granite Rock Co.; Beatrice G. Gay, administrative assistant, N.C.S.A.; J. R. Boyd, administrative director, N.C.S.A.; C. A. Gustafson, chairman of committee, Callanan Road Improvement Co., South Bethlehem, N. Y.; T. W. Jones, New Haven Trap Rock Co.; E. F. Haberkern, Columbia Quarry Co., St. Louis, Mo.

J. Craig McLanahan (McLanahan & Stone Corp., Hollidaysburg, Pa.); and Irwin F. Deister (Deister Machine Co., Fort Wayne, Ind.), new chairman of the division.

Manufacturers' Division The annual luncheon and business meeting of the Manufacturers' Division of N.C.S.A. drew the largest attendance in its history. The meeting was presided over by the outgoing chairman, J. Craig McLanahan (McLanahan & Stone Corp., Hollidaysburg, Pa.), and brief addresses were made by J. Reid Callanan and Horace J. Krause, outgoing and incoming presidents, respectively, of N.C.S.A. According to Mr. McLanahan, the division is functioning satisfactorily in all respects, especially in membership, which has reached the record total of 105 companies.

The new chairman of the division is Irwin F. Deister (Deister Machine Co., Fort Wayne, Ind.). The following are vice-chairmen: L. A. Eiben (Northern Blower Co., Cleveland, Ohio); Wayne W. King (W. S. Tyler Co., Cleveland, Ohio); and B. R. Maloney (E. I. Dupont de Nemours & Co., New York, N. Y.). Messrs. King, McLanahan, and Deister will represent the division on the N.C.S.A. board of directors. New members of the board of directors of the Manufacturers' Division are the following: L. W. Beck (Cummins Engine Co., Inc., Columbus, Ind.); Jack B. Bond (Nordberg Mfg. Co., Milwaukee, Wis.); G. P. Fenn (Caterpillar Tractor Co., Peoria, Ill.); H. R. Harrington (Goodyear Tire & Rubber Co., Akron, Ohio); G. W. Hoskins (Harnischfeger Corp., Milwaukee, Wis.); R. R. Long (Sanderson Cyclone Drill Co., Jacksonville, Ill.); D. J. Phillips (Austin-Western Co., Aurora, Ill.); A. E. Schneider (Stedman Foundry & Machine Co., Aurora, Ind.); C. Darrell Smith (Joy Manufacturing Co., Pittsburgh, Pa.); and V. L. Snow (Euclid Road Machinery Co., Cleveland, Ohio).

Special Events This convention also kept up with previous high standards of entertainment and special events. The greeting luncheon on the first day, the cocktail party and buffet dinner that night, the general luncheon on the last day, and the reception and banquet that night were all well attended and worthwhile.

The greeting luncheon speaker was Dr. William H. Alexander, pastor of the First Christian Church, Oklahoma City, Okla. In his dynamic talk on *Faith and Freedom* Dr. Alexander made it clear why he is rapidly gaining national recognition as a leader in right thinking. He believes that too many people are living in the twilight zone of honor and that we must stop making decisions on the basis of political expediency rather than on what is right and wrong.

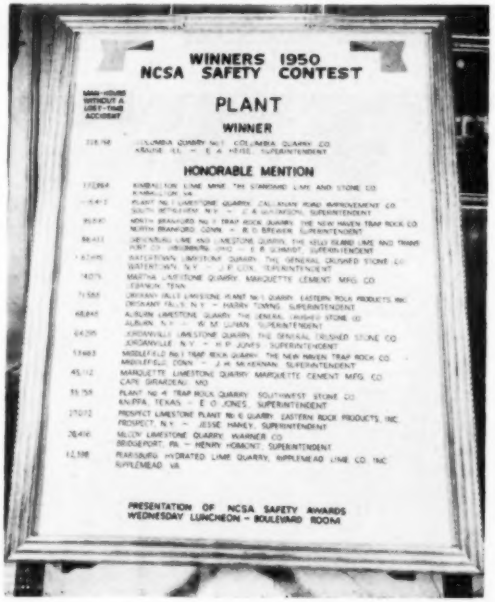
The speaker at the general luncheon was Samuel Grafton, news analyst and columnist of New York City and author of several books. His chief concern recently has been the domestic effect of foreign problems and his talk on *Who Owns the Future?* was an analysis of this subject.

An honored guest, who also made brief addresses at one of the meetings and at the banquet was Myrton Judkins, of Judkins, Ltd., Nuneaton, England, a leading producer of crushed stone in that country and a vice-president of The Institute of Quarrying, London.

The speaker at the banquet was James D. Arrington, editor and publisher of the Collins *News-Commercial*, Collins, Miss., and famous for his native wit. His talk was a combination of humor and shrewd comments on current affairs.

In order to encourage early attendance at the morning meetings on the first two days of the conventions, moving pictures were shown in advance of them. The one on the first day, *Let's Get Out of the*

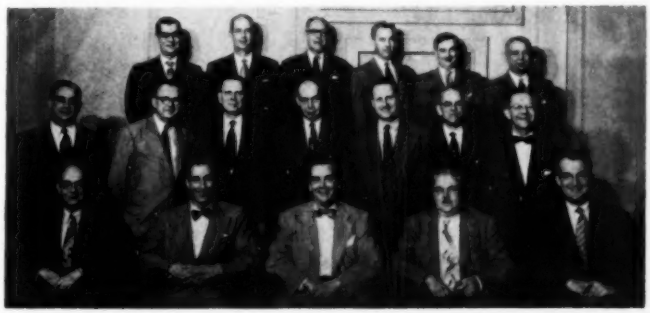
Exhibit on registration floor listing winners in the N.C.S.A. safety contest.



Muddle, was a sound-color movie by the General Motors Corp., which clearly and convincingly pointed out the nation's traffic problems and highway needs and emphasized the necessity for stimulating action at the community level. A short picture, *This Is Life*, supplied by the American Meat Institute, which was shown at 8:15 a.m. the second day, was successful in drawing early attendance for the operating meeting starting at 8:30. This movie traced the evolution of meat for our consumption from the earth and grass to the finished product at the butcher shop.

Business Conditions One of the most important items on these convention programs is always the report of regional vice-presidents on business conditions during 1951 and the outlook for 1952. This was presented by President J. Reid Callanan following a brief report to the membership. In all of the areas the 1951 volume was up from 5 to 20 percent, and 1952 was expected by some to be about the same, and by others to show some increase. Prices in 1951 were up from 4 to 10 percent, with a few areas reporting no change. In most areas, apparently, plants operated at one-shift capacity or a little over, and there was considerable increase in capacity through new plants or additions to existing operations, particularly in the Eastern, Northeastern, Midwestern and Southwestern regions. Distribution by uses varied considerably. In the Northern region chemical and metallurgical stone led with 80 percent, followed by building with 15 percent; in the Northeast highways and airports took 72 percent; in the Southeast highways took 48, build-

Member-company representatives who were present at the general luncheon to accept the trophy and certificates won in the N.C.S.A. safety contest. Front row: H. P. Jones, General Crushed Stone Co., Jordanville, N. Y.; Jess Haney, Eastern Rock Products, Inc., Prospect, N. Y.; John Kawaske, Callanan Road Improvement Co., South Bethlehem, N. Y.; E. O. Jones, Southwest Stone Co., Dallas, Tex.; John McKernan, New Haven Trap Rock Co., Wallingford, Conn.; and Robert D. Brewer, New Haven Trap Rock Co., North Branford, Conn. Top row: Harry Towns, Eastern Rock Products, Inc., Utica, N. Y.; J. P. Cox, General Crushed Stone Co., Watertown, N. Y.; C. A. Gustafson, Callanan Road Improvement Co., South Bethlehem, N. Y.; E. A. Heise, Columbia Quarry Co., St. Louis, Mo. (trophy-winning operation); W. M. Lunan, General Crushed Stone Co., Auburn, N. Y.; and Harry Homont, The Warner Company, McCoy Limestone Quarry, Bridgeport, Pa.



The board of directors, Manufacturers' Division, N.C.S.A. Top row: Darrell Smith, Joy Mfg. Co.; D. J. Phillips, Austin-Western Co.; H. W. Newton, Barber-Greene Co.; V. L. Snow, Euclid Road Machinery Co.; J. B. Bond, Nordberg Mfg. Co.; and L. A. Rhodes, Jeffrey Mfg. Co.; Middle row: G. W. Hoskins, Harnischfeger Corp.; A. E. Schneider, Stedman Foundry & Machine Works; G. P. Fenn, Caterpillar Tractor Co.; G. C. Holton, American Cyanamid Co.; W. A. Rundquist, Pioneer Engineering Works, Inc.; H. R. Harrington, Goodyear Tire & Rubber Co.; and R. F. Feind, Allis-Chalmers Mfg. Co.; Bottom row: J. R. Boyd, administrative director, N.C.S.A.; J. Craig McLanahan, McLanahan & Stone Corp.; Irwin F. Deister, chairman, N.C.S.A. Manufacturers' Division, Deister Machine Co.; Wayne W. King, W. S. Tyler Co.; and L. A. Eiben, Northern Blower Co.

Meeting of the board of directors, National Crushed Stone Association, on February 17.

ing 23, and ballast 20 percent; in the Southwest highways took 45, ballast 18, chemical and metallurgical 15, and building 8 percent. In most cases little change in distribution was expected in 1952, but highway building was expected to decline in the Central region and in the Southeast and to increase in the Middle West. In most cases it was reported that supplies were obtained readily and that equipment was obtainable but slow in delivery.

With respect to business conditions in Canada, it was reported that in Ontario the volume of business was up 15 percent in 1951, prices were up 5 percent, and most producers operated at capacity. In distribution, chemical and metallurgical led with 35 percent; and building, highways, and ballast followed in that order. A loss of about 10 percent in volume is expected in 1952, with no change in distribution. In Canada also equipment is a little difficult to get and slow in delivery.

Safety Awards The general luncheon, which was presided over by W. S. Weston Jr., (Weston and Brooker Co., Columbia, S. C.), featured the presentation of the N.C.S.A. annual safety contest awards. Lea P. Warner general chairman of the Cement and Quarry Section of the National Safety Council, commended the Association and its member companies for their spirited interest in safety, and urged members to increase their efforts to promote the safety program. C. A. Gustafson (Callanan Road Improvement Co., South Bethlehem, N. Y.), made the presentations. Winner of the contest was the Columbia Quarry No. 1 of the Columbia Quarry Company, St. Louis, Mo., with a record of 228,758 man-hours without a lost-time accident. E. A. Heise, superintendent of the winning quarry, accepted the award for his company. Other accident-free companies received certificates of honorable mention.

Myrton Judkins, Judkins, Ltd., Nuneaton, England, was an honored guest.

Report of Engineering Director A. T. Goldbeck, engineering director of N. C. S. A., instead of reporting on the various activities of his department, discussed a few of the many technical problems which are concerned with the uses of crushed stone. He said that there seems to be a shift away from the old waterbound macadam base course, with its large, uniformly-sized stone filled with screenings, in favor of densely-graded aggregate construction. Here the stone is specified to a gradation which is intended to produce a dense, uniformly-graded, compact layer which will remain stable and which will not become plastic when wet. Gradation is all-important, he said, and for best results the stone must have sufficient fine material of screenings size to fill the voids; and it is for this latter reason that so-called crusher-run stone is usually not suitable.

He mentioned the fact that a special study of the best way to construct this type of base course is being made by the Association's field engineer, who would report progress.

Mr. Goldbeck mentioned that on the New Jersey Turnpike the contractors elected to use asphaltic penetration macadam in preference to waterbound macadam for base construction under a bituminous concrete surface because it was considered more economical. It was possible to haul hot mix surfacing material over this base almost immediately without disturbing the surface, and it was also unaffected by rains, etc. He emphasized the necessity for adequate use of choke stone and the very thorough compaction which would prevent later compaction under wheel loads.

In discussing bituminous concrete, Mr. Goldbeck said that the finished surface should be stable, durable, and non-slippery. He discussed briefly some of the factors which make up such a pavement and said that his department has a very simple way of arriving at the optimum gradation for a desirable density and surface texture, no matter what may be the maximum size of stone. He added that details are available for the asking. For highways a not-too-dense, stony-textured surface, with asphalt on the lean, rather than on the rich side, is recommended. Too lean a mix, he said, can be cured by sealing the surface, but it is difficult to cure an unstable pavement caused by excessive asphalt in the mixture. The Army requires an even denser surface, with more fine particles in the aggregate, for airport runways.

Mr. Goldbeck then described some of the technical difficulties peculiar to cement concrete pavements, particularly the need for adequate waterproofing of joints and shoulders to keep water from reaching the subgrade and causing pumping. He stated that screenings and densely-graded stone form an ideal subgrade. He also described a manner in which a good road can be built with less steel than usual.

In this group were J. B. LaBarge, I. T. Umbright, C. H. Krause Jr., E. A. Heise, E. F. Haberkern, S. J. Lolan, Earl Pflasterer, Eugene Andres, Floyd Mumma, and Carl Asselmeier, all of the Columbia Quarry Co., St. Louis, Mo.

Dexter Bullard, A. W. Komonchak, George Foster, Seymour Fleming, George W. White, L. E. Fox, W. Ferguson, E. G. Sullivan, J. H. Jorgensen, M. C. Dow, and L. F. Miller, all of the New York Trap Rock Corp., New York, N. Y.

A. T. Goldbeck, engineering director, N.C.S.A., Washington, D. C.; Commander C. M. Noble, chief engineer, New Jersey Turnpike Authority, Trenton, N. J.; and W. R. Sanborn, Lehigh Stone Co., Kankakee, Ill.

W. S. Weston Jr., Weston & Brooker Co., Columbia, S. C.; W. P. Moss, Columbus Rock Co., Columbus, Ga.; and W. A. Foster and D. K. Corley, Palmetto Quarries Co., Columbia, S. C.

James Savage, Buffalo Crushed Stone Corp., Buffalo, N. Y.; E. N. Wood, Iowa Mfg. Co., Cedar Rapids, Ia.; H. H. Brandon, Melvin Stone Co., Melvin, Ohio; and L. B. Blanchard, Iowa Mfg. Co.

K. K. Kinsey, Concrete Materials & Construction Co., Cedar Rapids, Ia.; J. H. Hooten, Gulf Oil Corp., Atlanta, Ga.; and C. B. Moore and Marvin Nelson, both of Concrete Materials & Construction Co.

J. A. Toth, and W. F. Shotola, both of the Bantam Bearing Division, Torrington Company, South Bend, Ind.

Cottrell Farrell, Easton Car & Construction Co., Easton, Pa.; G. B. Flanigan, Chain Belt Co., Milwaukee, Wis.; R. Moore and O. E. Benson, both of General Crushed Stone Co., Easton, Pa.; and G. D. Fraunfelder, Easton Car & Construction Co.

Seymour Fleming, New York Trap Rock Corp., New York, N. Y.; and P. D. Archibald and John Kawaske, both of Callanan Road Improvement Co., South Bethlehem, N. Y.

Mr. and Mrs. J. H. Rigg, Acme Limestone Co., Fort Spring, West Virginia, and their daughter, Mrs. J. H. Pratt, Streator, Ill.

Dean Miller, H. Howard, Mrs. Mary Poncin, W. T. Klussman, E. C. Kaye, and G. P. Grant, all of Pit and Quarry Publications, Chicago, Ill.

Chemical reactivity, he said, is still a problem in some areas where certain types of cement are used, and many agencies are studying this problem. In some cases the stone and the cement together react in such a way as to set up internal pressure. The speaker suggested that a pozzolanic admixture, together with air entrainment, might help.

The common misundertanding of the meaning of the water-cement ratio which in many cases penalizes crushed stone was pointed out by Mr. Goldbeck. To overcome this, the Association has for many years been urging a modification of the method of using the water-cement ratio law and in 1942 brought out a bulletin (No. 11) dealing with this subject, and a revised bulletin in 1949 to account for air entrainment. This method is meeting with increasing success. He also commented on the results of recent fire tests, the benefication of aggregates, core tests, and a number of other subjects of current interest. In closing, Mr. Goldbeck, said that the tremendous pent-up demand for highways should insure continued prosperity for the crushed stone industry.

Report of Field Engineer In his annual report, J. E. Gray, field engineer, briefly reviewed the history of macadam pavement and said that although at one time it meant a certain type of pavement, it is now used to designate any type of solidified, waterbound base course. During the year, he said, he had visited many construction jobs in order to get information on this type of base, which is popular in some sections but in others is looked upon with disfavor as a base for high-type roads. Some object to the long delays caused by waiting for the subgrade to become dry and firm if adverse weather should occur during construction, to the slow rate of building due to the large amount of hand labor required, to the lack of smoothness of surface causing poor riding qualities in the finished road, and to the fact that huge quantities of large-size, closely-graded aggregates and screenings and none of the intermediate sizes of stone are required.

According to Mr. Gray, a good even subgrade is necessary, but this is not always provided as the contractor believes that it can be evened up in spreading the stone. The use of a bank-run gravel sub-base, he said, provides adequate drainage and also helps to spread the pressure. Providing a good sub-base, he asserted, means less work in subsequent stages. The base course, he

Bruce S. Campbell, Harry T. Campbell Sons Corp., Towson, Md.; Wayne W. King, W. S. Tyler Co., Cleveland, Ohio; and C. S. Klingelhofer Jr. and H. G. Campbell, both of Harry T. Campbell Sons Corp.

A. H. Sibley, Hercules Powder Co., New York, N. Y.; Harry Towns, Eastern Rock Products, Inc., Utica, N. Y.; and Emmett Gallaway and Jack Selden, both of Harri-Steel, New York, N. Y.

said, should be stable and of a high density to spread the load—a result obtained by using sand or screenings to fill the voids. If the base is laid properly, the bituminous surfacing will be easier to level off.

The macadam base, said Mr. Gray, has a number of advantages. It gives the operator an outlet for the large sizes of stone which are usually in excess, but it must be well graded and closely sized and it must be provided with a drainable subbase. Modern equipment is necessary, and it must be carefully placed. He also described the road rock or crusher-run type of base which is used west of the Mississippi, as well as the soil-aggregate base course used in some areas where the cost of stone is high. A number of slides were used to illustrate these various types of materials and bases and the construction of pavements utilizing them. In closing Mr. Gray, said that the success of the flexible pavement, which is a huge potential market for crushed stone, is dependent upon the efficient building of good base courses.

Administrative Director's Report-Summary Because the program was running longer than was expected, Administrative Director J. R. Boyd did not give his report, which all members will receive shortly by mail. In a brief resume of the report, he said that the Association's finances were in excellent condition, that all work in progress was going ahead satisfactorily, and that this convention in every way promised to set new records. He pointed out that ample time had been left for everyone thoroughly to cover the equipment exhibits, which were more numerous and better than ever before. He also emphasized that the need for the Association's services was greater than ever before, and that all of its resources were available on call.

Left, below: G. K. Escott, Associated Quarries & Construction, Ltd., Toronto Canada; and T. J. Shearer (Chicago) and F. O. Grubel (New York), both of Kennedy-Van Saun Mfg. & Engineering Corp., New York, N. Y.

Right, below: L. G. Young and N. Tarbox, both of Tarbox-McCall Stone Co., Findlay, Ohio; and Don Davis, Pioneer Engineering Works, Minneapolis, Minn.

Committee Reports The reports of the following committees were presented by the respective chairmen: auditing, resolutions, percentage depletion, group insurance, and membership. The approved reports presented by each committee are briefly as follows:

Auditing committee — separation of A.L.I. from N.C.S.A. completed; resolutions committee — resolutions to express the Association's appreciation to the Conrad Hilton Hotel staff and employees and to the Chicago Convention Bureau, and to extend congratulations to the Manufacturers' Division; percentage depletion committee — recommendation that the board refer percentage depletion to the executive committee, which is to meet with the percentage depletion committee for further investigation; group insurance committee — the proposed group insurance plan was not completed, due only to certain legal difficulties which will probably be cleared in a few weeks; membership committee — list of new member companies.

W. J. Lynch, E. F. Marsh Engineering Co., St. Louis, Mo.; and W. P. Lynch and C. A. Hurt, both of Rock Hill Quarries Co., St. Louis, Mo.

MRO and Capital Additions *The Outlook for MRO and Major Capital Additions for 1952* was discussed by Harold A. Montag, director, Mining Requirements Division, Defense Minerals Procurement Administration, and director, Mining Machinery Division, National Production Authority, Washington, D. C. Mr. Montag started his talk by pointing out that a new division had been set up to replace the old DMA and that it is now functioning. Watching changes of administrative agencies and sending requests for priority aid or information to the proper agency was stressed. Misdirected mail is one of the reasons for slowness in receiving answers or aid.

Under the Defense Act of 1950 the rule was laid down that the civilian economy, as well as the military, was to be strengthened. Every end product of the crushed stone industry contributes to one or the other and consequently the industry is entitled to every MRO and capital expansion assistance that can be justified. While such programs will be given every consideration and assistance, they may not always be allowed at the particular time wanted if there are other projects of greater urgency that take precedence.

Minor capital expansions up to $2,000 in cost can be self- certified under regulation M 78. If items costing more than that can be obtained from manufacturers without requesting priorities, they may be purchased. It was suggested that this method be explored before seeking assistance. Military requirements are expected to level off, and possibly to decrease in some fields; so a larger free supply of machinery and equipment will be available, and eventual decontrol of the industry will be made possible.

Price Order *A Tailored Price Order for Crushed Stone Industry* was covered by Walter H. Acheson, chief, Building Materials Branch, OPS, Washington, D. C. He pointed out that members of a committee from the crushed stone industry had met with him and other price stabilization officials on November 6. They agreed then that a Transportation Increase Order was most urgent, as many operators were caught in a squeeze between frozen prices and advanced freight rates. This situation was particularly disastrous to plants selling on a delivered basis or those that purchased some part of their requirements on an f.o.b. basis.

C. H. Bussmann, Pit and Quarry Publications, Cleveland, Ohio; and M. W. Brooks, White Motor Company, Cleveland, Ohio.

The Transportation Increase Order was presented to the top officials of OPS and was sent back for substantiation. It was requested that the increase would not violate the Johnston amendment, which defines fair and equitable profits as those that equal 85 per cent of the average of the three best years of 1946-1950. This is difficult to do, explained Mr. Acheson, as industry figures are far from complete in most instances, but he hoped that something could be worked out in the next few weeks.

Mr. Acheson explained that nothing had been done on the tailored price regulation, as his office had been snowed under by paper work on other regulations. He hoped that time would soon be found to work on it. The speaker stated that several types of price regulations are issued. One is the formula type, which sets up certain formulae to be followed in computing prices. These generally permit a specified mark-up over cost and are not applicable to the crushed stone industry. Another type is generally worked out on an area basis and gives exact dollars-and-cents ceilings on the commodities. This type can be used only if uniform prices throughout an industry were known and could be used for computing the ceilings—a setup not at all suitable for crushed stone operators. The third type of regulation is a general freeze at certain levels; it is the one that is being used now. The last type is the modified freeze order, under which prices are frozen at a level and then new price ceilings are computed by adding actual cost increases that

W. H. Van Buren, Quaker Rubber Co., Philadelphia; George White (Verplanck, N. Y.) and Clarence Stetser (New Hamburg, N. Y.), both of New York Trap Rock Corp., New York, N. Y.; and W. H. Pender (Philadelphia),-W. Joosten, (Chicago), H. W. Miller (Des Moines, Iowa), and E. A. Siefken (Philadelphia), all of Quaker Rubber Co.

have occurred since the freeze. CPR 22 is used for this type.

In formulating prices under CPR 22, manufacturers must submit Form 8. These forms from all members of the industry are then used to compute new prices on the basis of changes that have occurred from a pre-Korea base. This may give price increases or may result in rollbacks. This regulation is difficult to enforce in the crushed stone industry because of widely varying costs and the inadequacy of many records.

Until such time as a tailored regulation can be issued, the industry was advised to use CPR 77, which provides for individual plant adjustments to prevent hardship. Where these are allowed, they will enable plants to include increased freight rates. Regulations GOR 20 and 21, which were issued as a result of the Capehart Amendment, permit companies to receive price increases that do not violate the Johnston amendment. GOR 20 is for companies with annual sales of less than $250,000. It asks for comparisons of cost ratio to sales in the first half of 1950 and the first half of 1951. GOR 21 is for companies with annual sales of more than $250,000 and permits computing of costs by their own accounting methods. This is a very complex regulation, and skilled accountants and lawyers are needed to work it out.

Mr. Acheson suggested that most plants would probably find CPR 77 a better regulation for seeking price relief as all cost increases can be included up to the filing of the application, while under GOR 20 and 21 the computing date is prior to the last freight rate increase and would not include it. Mr. Acheson was hopeful that something could be worked out soon on the Transportation Increase Order and that work could be started on a tailored regulation for the industry.

Wage and Salary Controls

Wage and Salary Controls, an important subject to every member of the crushed stone industry, was the topic presented by William F. Howe, Gall, Lane and Howe, Washington, D. C., general counsel for the National Crushed Stone Asso-

R. C. Pennington (Columbia, S. C.) and R. A. Hemphill Sr. (Thomson, Ga.), both of Weston & Brooker Co., Columbia, S. C.; and F. E. Smith, Frog Switch & Mfg. Co., Asheville, N. C.

A. N. Foley, West Roxbury Crushed Stone Co., West Roxbury, Mass.; W. H. Milroy, Bacon-Greene & Milroy, New Haven, Conn.; and L. E. Lippherdt, Allis-Chalmers Mfg. Co., Boston, Mass.

R. J. Hummel, Consumers Company, Chicago, Ill; W. H. Brett, Barber-Greene Co., Aurora, Ill.; C. O. McCall, B. F. Goodrich Co., Chicago, Ill.; and W. B. Ryan, Consumers Co.

Below: Frank Wall and Harold Tardy, Lynn Sand & Stone Co., Swampscott, Mass.; and A. H. Sibley, Hercules Powder Co., New York, N. Y.

A. C. Quinn (Minneapolis, Minn.), J. A. Nagle (Milwaukee, Wis.), and C. E. Hanson, (Minneapolis), all of the Diamond Iron Works, Inc., Minneapolis.

ciation. The speaker pointed out the purposes, the progress, the current regulations, and the outlook for future controls of both the Wage Stabilization Board and the Salary Stabilization Board. He explained that the principal control agencies were far from perfect in design. In its functions, the speaker pointed out, the Salary Stabilization Board works in a manner similar to the Wage Stabilization Board, although the wage board is the most important.

Under the Defense Production Administration the wage board has four objectives, Mr. Howe declared. These are to prevent inflation, to promote collective bargaining, to prevent strikes which would impede production, and to prevent hardships and inequities. However, he said, the main purpose of either board is to delay and retard the effect of rapid increases in wages.

As the wage movement continues upward, the speaker declared, the boards are getting very close to an exhaustion of regulation measures. If and when union pressure becomes too acute, the boards will be forced to indorse new regulations designed to halt the demands, he emphasized. In explaining the general wage regulations 5, 6, and 8, Mr. Howe gave a brief resume of the requirements of the two boards regarding the eligibility for endorsement of the various types of increases, and the general provisions of each. In effect, the regulations are essentially as follows: Regulation 5 of the Wage Stabilization Board covers increases due to merit, transfers, promotions, and length of service. Merit and length-of-service increases may be handled in any of three optional ways—according to past practice as in effect January, 1951; under the 6 percent clause, that is, provided that the increase does not exceed 6 percent of the straight time pay for the year; and as the established plan which would have to be in effect January 25, 1951. If any of these optional requirements are met, it is permissible to go ahead without further board approval.

A similar regulation governs the salary group. This is called Salary Stabilization Board Regulation 3. Regulation 6 of the Wage Stabilization Board permits the granting of wage increases not to exceed 10 percent of earnings as of March, 1951. Regulation 6 of the Salary Stabilization Board permits the restoration of the differential between the earning levels of executives and laborers from January, 1951. Wage Stabilization Board Regulation 8 covers the cost-of-living increase. It provides for the compensation in wages for the percentage rise in the cost of living since January, 1951, provided that a provision is included to cover a cost-of-living decline also.

Another regulation, Number 19, provides for the creation or expanding of a health-and-welfare plan without any further board approval, provided that all other requirements are met. Board restrictions are currently undergoing a general relaxation, the speaker said, and the institution of a pension plan without prior board approval is an item expected to be developed in the near future.

Now in progress is the weighing of a proposed productivity regulation, Mr. Howe said. Under this regulation workers would share in company productivity, and thereby have their wages adjusted accordingly. The government is currently investigating such a proposal, and an endorsement is predicted.

If the present trend of wages continues and controls are kept in a precarious position, industry will suffer the consequences, Mr. Howe warned. The outlook for the future will depend on the active part each member of the industry takes in promoting collective bargaining and restoring the situation to normal, he concluded.

Percentage Depletion Percentage depletion allowance has been and continues to be a subject of utmost importance to the crushed stone industry. James W. Haley, vice-president, Jewell Ridge Coal Corporation, Washington, D. C., in his talk, *Practical Application of a Percentage Depletion Allowance to Crushed Stone*, presented some enlightening remarks on this complex subject. He clarified many of the problems connected with its application to the crushed stone industry. He congratulated the men of the industry on the success of their endeavors in connection with the Revenue Act of 1951, but he warned that if extreme positions were taken, the whole principle of percentage depletion may well be jeopardized. He offered his information as an interpretive guide, but suggested that producers rely principally on the statute itself, official explanations of it, or the advice of their own tax counsel.

Following a brief resume of the history of percentage depletion and the facts leading to its inauguration, the speaker pointed out the importance of its principles to the welfare of the nation. In the opinion of Mr. Haley, the percentage depletion principle applied to natural resources is one of the foremost reasons for the superior economic and military strength of the United States. If percentage depletion is cut off, he declared we shall certainly go down hill as a nation.

In presenting the facts of percentage depletion allowance, Mr. Haley read parts of the following reports, which are contained in the present control bill, known as the Revenue Act of 1951: Internal Revenue Code, Ways and Means Committee Report, Senate Finance Committee Report, Senate Finance Committee Supplemental Report, and Conference Report (Amendment No. 53).

Under existing conditions, as prescribed by the Revenue Act of 1951, crushed stone producers are eligible for percentage depletion allowance to the extent of 5, 10, or 15 percent, depending on the type or grade of stone processed, according to the speaker. Generally speaking, pro-

ducers of all hard rock or common stone with no use classification other than road building material would be allowed a 5 percent depletion. Producers of stone containing calcium carbonate, magnesia, or magnesium carbonate, or any combination thereof which would be suitable for agricultural purposes, may be granted a 10 percent depletion allowance. Producers of metallurgical or chemical grade limestones are eligible for a 15 percent depletion allowance.

Regarding application for percentage depletion allowance by either the parent organization (which would include all of its subsidiaries) or by each subsidiary separately, Mr. Haley said the choice is optional. It is up to company officials to determine which method would be most beneficial to them. He also emphasized that a lessee is entitled to percentage depletion on a property as well as the lessor.

In conclusion, Mr. Haley presented the definition of gross income from property as interpreted by the Internal Revenue Code. As depletion allowance is based on gross income from property, this subject was of great interest to those present, and the discussion concerning gross income, as well as other points brought out by the speaker, was of a spirited nature.

Quarry Safety Practices C. A. Gustafson, superintendent for the Callanan Road Improvement Company, South Bethlehem, N. Y., and chairman of the N.C.S.A. Accident Prevention Committee, discussed *Quarry Safety Practices*. He pointed out that there is no easy road to safety; that it must start at the top of an organization and requires the full cooperation of every employee. Briefly reviewing the history of the safety movement, he said that early efforts were prompted largely by the cost of accidents. Then the industry went through the stage of erecting guards at all danger points, but accidents kept on happening, due to the human element. The industry, he said, is now in the third stage of teaching and training, starting in with safety goggles and shoes, hard hats, etc. All these safety items have been greatly improved in recent years both as to protection and comfort. Most of the larger companies, said Mr. Gustafson, are now doing a good safety job, but the smaller operations are lagging.

In describing his company's safety experience, Mr. Gustafson said that in 1947 an excessive insurance rate was paid; but safety measures have so far improved conditions that in 1951 the rate paid was 31 percent under the New York State rate or $7,000 under what would have been paid under 1947 conditions. Every new employee is given his first pair of safety shoes free of charge, and the company pays 25 percent of the cost of later ones, regardless of where they are purchased. Hard hats and goggles are also provided free. When an employee needs prescription goggles, he pays for the prescription only. The speaker warned that many men will not wear heavy goggles except when absolutely necessary, and that spectacle-type goggles are available which provide 85 percent protection. The old heavy hard hats, said Mr. Gustafson, often ended in the crusher, but the aluminum type is being worn now, and no one is permitted in the plant without one. Winter liners keep them comfortable in cold weather.

A new employee, said Mr. Gustafson, is first given a briefing on his job by the foreman and superintendent. This not only shows him the hazards of his job but it also gives him a good first impression of the company and its concern for his well being. The work of the safety committee is also important. In Mr. Gustafson's company the committee has both permanent and rotating members, the latter for one month. The chairman is always a member of management who has the authority to make decisions. His company firmly believes that the attitude of management determines the results obtained, and company officials attend all safety meetings.

Back injuries are the most common, and 90 percent of these are due to improper lifting. All employees therefore are taught how to lift properly. Information on this matter, he said, can be obtained from the National Safety Council or from any insurance company. Best results in enforcing safety rules have been obtained by getting voluntary co-operation without punishment or rewards, and the unions have been of great help in convincing employees that the safety rules are for their own good.

Drilling Practices A feature of the operating session was a paper by E. F. Haberkern (Columbia Quarry Co., St. Louis, Mo.) on *Drilling Practices*. He described the various types of drills used for different methods of blasting and gave some of their characteristics and some of the things that must be done to get the best results from them. With the churn drill, best for vertical faces of 30 ft. or more, the most favorable combination of drill weight and stroke must be determined for each quarry. With the wagon drill, which is best for vertical holes of 30 ft. or less, it is important to keep the air pressure at the drill at about 90 lb. With lower pressure the efficiency drops off and with higher pressures the maintenance increases. The piston-type percussion drill, said Mr. Haberkern, has the advantage that it will break stuck rock; and the frequency and force of the blow determine the speed of drilling. He also described the rotary drill, the jackhammer and the diamond drill.

In selecting the drill to be used, said Mr. Haberkern, the things which should be considered are the drill pattern desired, the capacity per hour, the cost per foot drilled, the first cost, upkeep, labor, footage, depreciation, etc. The churn drill, he pointed out, must be readily movable to reduce setup time. With the wagon drill, a definite volume and pressure of air are necessary; and the best efficiency is obtained with a portable compressor and single steel changes up to 30 ft. With the Quarrymaster, the setup time must be at the minimum, and there must be adequate air pressure.

In his own operations, the speaker reported, the change from churn to rotary drills increased the bit cost per foot, but the increase in speed from 5 to 15 ft. per hr. and other economies more than compensated for this. These drills are now being converted from water to air cleaning, and a further increase of 20 to 25 percent in capacity and longer bit life are expected. Both this type of drill and the Quarrymaster, said Mr. Haberkern, require steady use and large footage to justify the higher first cost. In closing, he indicated that all currently popular methods of drilling can be improved, and that both the auger type and the flame drill have a future in quarrying.

Primary Blasting Practices At the operating session a paper on *Primary Blasting Practices* was presented by T. C. Cooke (Lynn Sand & Stone Company, Swampscott, Mass.) He divided the subject into three categories: vertical holes, horizontal holes, and coyote holes or tunnels. Horizontal drilling is done only on low faces unless it is in con-

junction with vertical holes; but the advent of larger bore wagon drills has increased this height somewhat. Vertical drilling, he said, is done with a range of diameters from $1\frac{5}{16}$ to 12 in.; but whatever size is required, the amount of explosive used must be within 10 percent of ideal or the stone will either be unnecessarily thrown about the quarry or left in a condition unfit for digging. Each operator must determine the amount of energy required per ton of rock in his particular quarry. Mr. Cooke briefly reviewed the progress made in blasting in recent years and mentioned the improved fragmentation and reduced vibration obtained with the millisecond delay method of detonation if it is properly used.

According to this speaker, there is much to be learned about delay blasting. He said that tests made in a company quarry with intervals from 5 to 36 milliseconds showed an optimum of about 30 milliseconds. In a series of test shots of from one to 15 holes 12 holes were found to be about optimum, but the vibration curve was still going down at 15 holes. In his quarry seven times as much explosive can now be detonated as before the advent of delayed action, with only one-fifth the vibration. In addition, the drop ball now operates one hour per shift instead of eight, and production is up at least 25 percent.

Fragmentation, Mr. Cooke stated, is affected to a lesser degree by the period of delay and the number of holes in the blast. He told of the results of other experiments with respect to period of delay, number and spacing of holes, depth of holes, etc., and also the danger of propagation. He then gave a list of 19 things which have been learned or remain to be proved about delay blasting.

In answer to questions, Mr. Cooke said that the most efficient use of explosives causes the least vibration, and he urged producers to try out different patterns, types, and loadings in order to find out what is best for their operations. In his quarry best results are obtained by drilling 4 ft. below the quarry floor; but where there are shearing seams, it may not be necessary to go below at all. He also said that delay blasting causes incipient fractures within the rock, which makes it easier to crush; but these fractures occur only in the large pieces and do not affect the soundness of the finished product. In his quarry the yield with delay blasting is nearly 4 to 1.

Mr. Cooke advised watching weather conditions when blasting in order to minimize complaints, as weather affects the air waves but not the ground waves. The air waves are affected by the humidity, the direction of the wind, the cloud ceiling, etc. When the humidity is high and the ceiling low, it is usually best not to blast. The speaker said that using a fine stone cover over the Primacord also helps to eliminate complaints. In his operations the practice is to make a dry run before a blast. This is done by removing the caps, completely wiring the shot and then firing the caps. This, he said, shows up failures and, as a result, they have never had a bad shot. Mr. Cooke mentioned one quarry which had eliminated complaints from a nearby town by checking blasts with a seismograph. As a result larger blasts are being made with less vibration, and fewer blasts are necessary.

Use of Microscope

The Microscope and Aggregate Behavior was covered by Robert H. Nesbitt, geologist, Office of the Chief of Engineers, Department of the Army, Washington, D. C. Mr. Nesbitt prefaced his remarks by pointing out that all of the ordinary accepted tests for aggregates do not reveal the mineral composition of the rock in most cases. The physical abrasion tests are of value in determinations for road materials but do not aid much if some other structure is being built. Specific gravity tests are inconclusive as well-bonded porous material may be much more satisfactory than a poorly bonded dense material for use in concrete. Chemical tests are equally uncertain as the presence of certain elements may be desirable in some forms and undesirable in others. Thus the silica content of an aggregate will be desirable if the silica is crystalline and undesirable if it is amorphous and present as opaline material. Similarly, clay may be inert and unobjectionable in small quantities but decidedly injurious if present as a montmorillonite which will cause swelling and deterioration of the aggregate. Iron present as pyrites may be reactive in limestone to form gypsum.

In passing on aggregates for use in construction, the mineral composition of the rock should be known as it is the basic information on how the aggregate will behave. The physical properties as determined by petrographic tests are equally or more important than the chemical composition as shown by chemical tests. The petrographic test should be done first on core drill samples or samples from open quarry faces. These tests are quick and accurate and will provide much information that will prove useful in conducting other tests. In some cases it is the only test needed, and in others it is the decisive one.

Use of the microscope in making petrographic determinations is becoming more prevalent. These examinations show the bond between particles, the presence of minor minerals that may be reactive, grain size, and the presence and extent of pores. The examination also shows the quantity of minerals present, so that the extent of unstable compounds can be accurately ascertained and evaluated for their effect on the concrete. In some cases microscopic examinations have revealed that substances such as chert which appeared to be objectionable visually were actually present in such small amounts that they would be unobjectionable in use. Microscopic tests are used first to identify the rock samples. This consists of an identification of the minerals present in the rock. In many cases this test, which may take an hour, will be all that is needed. When necessary, a microscopic analysis is made. This not only identifies the minerals present, but also shows the grain structure. Generally 5 to 10 lb. of material and several hours' time are needed for such an analysis. A more detailed analysis needs about a 100-lb. sample which is representative of the entire deposit. It takes a day or two and reveals the minerals, grain structure, porosity, grain bond, rare minerals, reactive substances, and all other information on the rock. This is especially useful in conjunction with drill cores.

The microscope is also used on concrete in the same way as an aggregate. Test beams or samples are used to show the changes that occur in aggregates when they are used in concrete, the soundness of the cementing material, porosity, and other characteristics. Microscopic examinations are also useful in deciding whether spalling on concrete structures is due to reactive aggregates or whether it is caused by flaking off of laitance material from an overwet mix.

A microscope in the hands of a competent petrographer is rapidly becoming one of the important instruments in determining aggregate soundness and its ultimate behavior.

Mobilizing Sales Forces Creative selling is the foundation of business and the economic standard of living of our country, and it is the principal concern of every industry today to constantly find new ways and means of promoting and selling their products. This was the opinion of Robert A. Whitney, president, National Sales Executives, Inc., New York, N. Y., in his talk, *Mobilizing Your Sales Forces for Today's Problems.* In presenting his subject, Mr. Whitney spoke of the importance of sales and sales forces, the job ahead in sales, and the outlook for business and industry in the future as affected by sales.

There are still those who seem to believe that a satisfactory job has been accomplished in sales and sales promotion. However, said the speaker, statistics reveal that there is still an important job ahead—to reach people and sell them the products they lack. The termination of the present national emergency will present a challenge to sales personnel, the speaker pointed out. An overproduction of approximately 35 percent will result from the changeover, and it will be the job of salesmen everywhere and in every industry to dispose of this surplus.

The big problem is in research, and sales forces must be trained and geared to higher levels than ever before to open new mediums for the products of industry. If we don't keep plugging in this direction, Mr. Whitney warned, industry will land in another depression.

Plants may be built and personnel trained to operate plants in a matter of months, but it takes years to establish an efficient sales staff capable of promoting and selling the product to net a profit, the speaker declared. The first job of business is to sell its products, and consequently business must concentrate its efforts on establishing the most interesting and effective sales program. This country affords the people a freedom of choice of their buying power, and so the opportunity for sales is there. It is the job of each salesman to turn this opportunity into a profit for his company, Mr. Whitney said. It is a recognizable fact that people can be motivated to buy if the sales approach is right, and one of the problems of every member of a sales force is to develop the proper approach.

Another phase of the problem, and perhaps the most important one, is the education of youth regarding competitive business and free enterprise, Mr. Whitney emphasized. In a recent survey of a group of teen-agers it was found that 18 percent were convinced that our basic industries should be controlled by the government. Another 12 percent were undecided on the issue. These teen-agers in another five years will be our salesmen, our employees, and our voters; and it is the duty of industry to present the system of free enterprise to them before it is too late. We must do a job of selling this way of life if we expect to build sales forces to insure the future freedom of business and industry, Mr. Whitney concluded.

New Jersey Turnpike Commander Charles M. Noble, chief engineer, New Jersey Turnpike Authority, Trenton, N. J., in his talk, *The New Jersey Turnpike Pavement—Design and Construction,* spoke of the need for and the general design and construction of the recently completed New Jersey Turnpike, which extends the full length of that state. The project, which was started in March, 1949, is perhaps one of the most interesting and important toll roads built in the United States in recent years, according to the speaker.

Citing the reasons for the project, Mr. Noble revealed that the state of New Jersey ranked second in the nation in population per square mile and sixth in industrial activity. In view of these facts, a super-highway such as the turnpike became a necessity to relieve the problem of traffic congestion throughout the state.

The highway, designed to support a maximum 36,000-lb. axle-load, was built in seven sections, with an engineer assigned to supervise each section. On the basis of competitive bids, the flexible type of asphalt concrete was chosen for the surface. All sub-base material was rolled to 90 percent compaction, while the asphalt surface layers were treated to 95 percent compaction, he pointed out.

Mr. Noble said that the road was constructed with a 6½-in. sub-base, a 7½-in. penetration base, and a 4½-in. surface. The sub-base contained sand and gravel with a maximum of 10 percent passing 200 mesh and a plasticity index of 6. The penetration grade contained a high-grade crushed stone of a low absorption rate. Three layers of 1½ in. each of a hot-mix type asphalt concrete comprised the surface bed, and each course was prestressed with a 25,000-lb. load.

Along each side of the highway ditches 4 ft. deep were provided for drainage purposes. Mr. Noble showed several slides of sections of the road in various phases of construction. There were also screen enlargements of maps and tables of figures verifying the data he had presented in his talk.

1950 Fuller's Earth Output Is Highest Ever Recorded

The production of fuller's earth in 1950 reached the highest peak in the history of the industry, according to reports of producers to the U.S. Bureau of Mines. The tonnage increase over 1949 was 23 percent, and 18 percent over the previous record year, 1930.

The use pattern in 1930 was much different from that of 1950. Mineral oil refining accounted for most of the tonnage consumed in 1930, whereas in 1950 it was still the largest single consumer, augmented by new uses such as absorbents, insecticides, and rotary drilling mud. Fuller's earth consumed in mineral-oil refining in 1950 totaled 156,643 tons or 40 percent of the total output as compared with 47 percent in 1949. Absorbent uses accounted for 83,684 tons or 21 percent, as compared with 22 percent in 1949; insecticides, 68,928 tons or 18 percent, as compared with 12 percent of total for 1949; rotary-drilling mud, 37,631 tons or 10 percent, as compared with 9 percent in 1949; and vegetable-oil, 21,261 tons, 5 percent in 1950, as compared with 6 percent in 1949.

Cement and Concrete Reference Book, 1951 edition, recently came off the press as a publication of the Portland Cement Association. Among the topics covered are cement and concrete in paving, structural uses of concrete, precast concrete products, special uses of cement, and other related subjects. Price 50 cents per copy.

The Perlite Manufacturing Company, Carnegie, Pa., has reported that 1951 sales doubled those of 1950. Large quantities of Plasterlite and other forms of processed perlite are being used in Pittsburgh's building boom. Coleman Ward, president of the firm, recently announced the completion of a $100,000 expansion program.

The Ideal Cement Company of Denver, Colo., has given the University of Wyoming, Laramie, Wyo., a second grant of $1,200 to support a concrete and concrete aggregates research program. Known as the Charles Boettcher Fellowship, the grant will be used by the university's engineering department in trying to improve the durability of concrete.

Report on Current Labor Developments

New Wage and Salary Stabilization Rules for Salesmen

another P&Q exclusive

BOTH the Wage Stabilization Board and the Salary Stabilization Board have recently issued new regulations regarding increases which may be made in the compensation of sales employees who are paid in whole or in part on a commission basis. The Wage Board's regulation covers inside salesmen and driver-salesmen. The Salary Board's regulation covers outside salesmen.

Elements of Salesmen's Earnings Controlled

Both boards recognized that the compensation of commission salesmen results from four elements, some of which may be found separately or in combination with others. Their regulations, therefore, were applied to these elements which are:

1. The rate of commission; that is, the predetermined percentage which is applied to the dollar volume of sales to determine the commission earnings.

2. The drawing account; that is, the amount which the commission salesmen are permitted to draw each payroll period, which is later offset periodically against their realized commission earnings.

3. The minimum guarantee; that is, the amount which is guaranteed to be paid each payroll period even though realized commission earnings fall below that amount.

4. The salary or base rate; that is, the amount which the commission salesman is paid each week which is not offset against realized commission earnings.

Adjustments in Commission Rates

Both boards prohibited adjustments in the rate of commission which was in effect on the "freeze date," January 24, 1952, without their specific approval. To change a commission rate, it is necessary, therefore, to file a petition with the Wage Stabiiization Board for inside salesmen and driver-salesmen and with the Salary Stabilization Board for outside salesmen. In that petition, it is necessary to present a case that the going commission rate is inequitable, either in relation to commission rates for like work, or in relation to other rates in the establishment.

The respective board will consider the petition on its merits. Only if convinced that approval of the petition is necessary to correct an inequitable situation will it approve the proposed change.

By S. HERBERT UNTERBERGER
S. Herbert Unterberger & Co.
Industrial & Labor Economists
Washington, D. C.
Philadelphia, Pa.

Changes in Drawing Accounts

For inside salesmen and driver-salesmen, the Wage Stabilization Board will permit drawing accounts to be increased or new drawing accounts to be established without its prior approval, provided that the new or changed drawing account does not exceed 70 percent of the average total earnings of the same group of commission salesmen during the preceding calendar year.

Or, if the drawing account is to be changed from time to time during the year, it may not exceed 70 percent of the average total earnings of the same group of commission salesmen during the same period in 1950. For example, for the summer months, June through September, the employer may wish to establish a drawing account of $70 per week. He may do this if, during the same months in 1950, $70 amounted to no more than 70 percent of the salesman's total earnings; that it, if during the previous period the average total earnings were at least $100 per week.

For outside salesmen, the Salary Stabilization Board will permit drawing accounts to be increased or new drawing accounts to be established without prior approval of that board, provided that the new or changed drawing account of each commission salesman does not exceed *77 percent of his total earnings in the calendar year 1950*, or of the average of his total earnings in any three out of the five calendar years 1946 to 1950.

The Wage Board's regulations for inside salesmen and driver-salesmen applies to the entire group, while the Salary Board's regulation for outside salesmen applies to each salesman separately.

Adjustments in the Minimum Guarantee

For inside salesmen and driver-salesmen, the Wage Board will permit general increases equal to 10 percent of the January 15, 1950, average, plus increases to compensate for rises in the cost-of-living since January, 1951, to be made without prior approval.

For outside salesmen, the Salary Board uses quite a different rule. It will permit the same increases in minimum guarantees as are permitted for drawing accounts.

Adjustments in the Salary or Base Rate

For inside salesmen and driver-salesmen, the Wage Board will permit general increases equal to 10 percent of the January 15, 1950, average salary or base rates, plus increases to compensate for rises in the cost-of-living since January, 1951, to be made without prior approval.

For outside salesmen, the Salary Board will permit general increases equal to 10 percent of the January 15, 1950, average salary or base rates to be made without prior approval.

Adjustments in Commission Earnings

Although no increase in commission rates is permitted without prior approval, the Wage Board does permit certain additional increases in commission earnings for inside salesmen and driver-salesmen without its prior approval. Here the Wage Board differentiates between two types of commission salesmen:

A. *Salesmen whose commission rates do not exceed 2 percent.*

Where the commission rates do not exceed 2 percent, the salesmen may receive an increase based upon commission earnings. Lacking board approval, such increases must be given as side payments.

These increases may equal 10 percent of the average commission earnings for the group of employees in the base period which may be any of the following periods: (1) the first regular payroll period ending on or after January 15, 1950; (2) all payroll periods ending during the period July 1, 1949, to June 30, 1950, inclusive; or (3) all payroll periods in the calendar year 1950.

Additional increases may also be made to compensate for rises in the cost-of-living since January, 1951.

B. *Salesmen whose commission rate exceeds 2 percent.*

Where commission rate exceeds 2 percent, salesmen may receive increases based upon their commission earnings without prior approval only if their commission earnings are not already equal to their base period commission earnings plus 10 percent plus an amount necessary to compensate for increases in the cost-of-living. They may receive the difference between their current commission earnings and this amount as a side payment.

Factors Affecting Flotation

PART II

By H. J. GISLER
Chief Metallurgist
Denver Equipment Co.

Method of Introducing Air Air is essential in flotation and is most effective in a finely divided or diffused state. Violent bubbling of air through the pulp or introducing of air into the pulp without mixing it is inefficient and expensive.

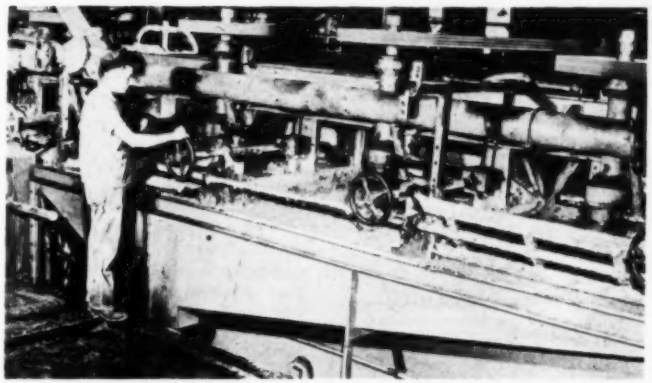
It is generally considered poor practice to introduce an excessively large volume of air and have only a small percentage effective. Air at 2 to 5 pounds' pressure is expensive, and particularly so if additional air has to be used to circulate the pulp through the machine. Air at this pressure often causes segregation and stratification in the flotation cell.

The primary function of air in flotation is to form bubbles which rise to the pulp surface without violence and carry with them the flotable mineral. Since bubble surface area varies inversely as the diameter it is evident why thorough diffusion of air in a flotation cell is so effective.

Of secondary importance is the oxidizing effect of the air in pulp. Air, being one of the strong oxidizers, should be controlled, and this factor probably accounts for some of the unusual results under various methods of air introduction. Air under pressure in a flotation machine, therefore, deserves careful study, and its proper application often results in better metallurgy and low treatment cost.

Not all ores treated by flotation require the same amount of air for effective separation. This may also apply on a single ore. The cleaner and rougher sections may operate best with a restricted amount, whereas the scavenger cells may require more air to float the last small percent of middling, partially tarnished, or oxidized mineral. These variable conditions as to air requirements are best served with a mechanical type of machine in which air is introduced for bubble formation only.

The advantage of introducing air under atmospheric or low pressures, usually about 8 to 10 ounces, is gradually being appreciated and is considered a step forward in modern flotation.

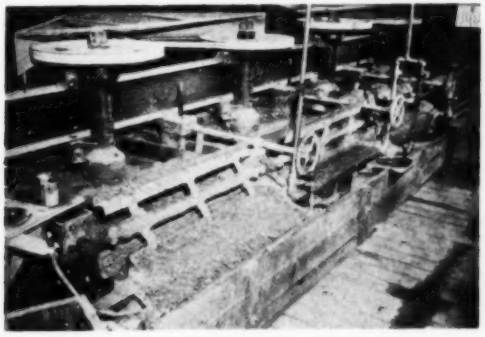


Supercharging permits the addition of air or gas to Denver Sub-A cells at low pressure. These six No. 30 Denver Sub-A cells, with double overflow, produce 61.1 tons of phosphate concentrates per hour in the Florida phosphate field.

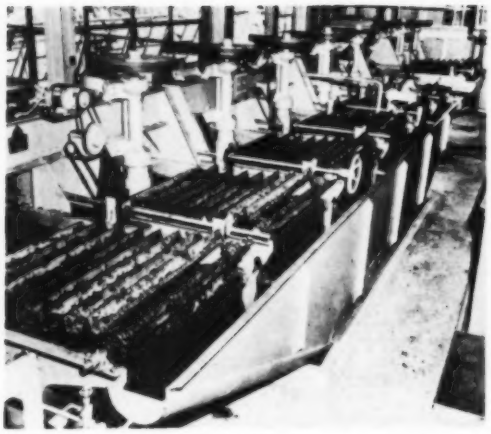
Kind of Gas to Form Bubbles Today air is universally used in flotation, but gases are now receiving considerable attention, particularly on oxidized ores and certain nonmetallics. It is only reasonable to assume that a reducing gas is more effective on an oxidized ore treated by sulphidizing reagents, than air with its high oxidizing effect. It may only be necessary to add a small amount of reducing gas to neutralize the oxidizing effect of air.

It is a simple matter to add these gases to a pulp in some mechanical machines by suction down the standpipe or under low pressure. The impeller action in a properly designed machine makes effective use of every cubic foot of air or gas by thorough diffusion through the pulp which is so necessary for chemical and physical reactions.

No froth paddles are necessary to remove the heavy mineral-laden froth from this older Denver Sub-A flotation machine cleaning zinc in a large western Canada concentrator.



Standard froth paddles remove a zinc rougher concentrate from this 4-cell No. 30 Denver Sub-A flotation machine.



Chain-driven rakes remove and dewater a heavy "matte" of coal concentrates from these No. 30 Denver Sub-A Lasseter-type cells.

Transverse launders remove the froth from No. 30 Denver Sub-A flotation cells in a large phosphate processing plant.

Sometimes certain foreign gases and smoke may upset flotation conditions when introduced into the mill atmosphere. Even smoking near a laboratory flotation machine will at times completely destroy a froth and indicates why its control should be considered.

Removal of Concentrates After the air bubble has gathered its load of mineral particles to be floated, it should be taken to the froth lip in a direct line without interference by cross currents. Upon reaching the lip it should be quickly removed by a froth paddle. In many machines not using paddles, the removal of froth is accomplished by a squeezing or crowding action. The froth near the lip is pushed over by the minerals below and behind it. This crowding action, if not properly controlled precludes the possibility of making a high-grade concentrate in the first machine, thereby requiring cleaners and recleaners. It also may result in lower recovery due to the bubbles dropping their load before they can work their way to the overflow lip. This is particularly true of certain types of machines where higher than normal requirements of frother must be used to provide froth movement over the cell lip. This, of course, is not conducive to selectivity and may result in difficulties in subsequent cleaning operations.

If a selective or high-grade froth is to be obtained, the mechanical type of machine with controlled aeration is best suited. Recent practice has demonstrated this on a wide variety of metallic and nonmetallic ores. Final high-grade concentrates are usually removed from the first cell or first two cells and require no further cleaning. More intense cleaning and recleaning can then be directed towards the lower-grade product from subsequent cells.

On quick-floating, low-ratio of concentration ores, a double overflow machine may be desirable as for example in phosphate, potash, barite and coal flotation. Crowding boards are sometimes employed to assist rapid movement of froth towards the overflow lip before the bubbles have a chance to drop their mineral load back into the pulp. Transverse and star launders in certain instances will also aid in quick removal of flotable mineral from the cell surface.

A positive pulp level control is important for proper froth removal. Usually in the cleaner and recleaner cells a deep froth is desirable and allows ample opportunity for gangue or undesirable mineral to be rejected. A high pulp level towards the end of a rougher machine is often necessary to get the last fraction of slow floating and coarse mineral over in the froth product for subsequent retreatment.

In the case of coarse coal flotation where a heavy "matte" of clean coal forms on the cell surface, special scrapers mounted on a drag chain are used. The coal concentrate can be removed in this manner at densities up to 60 percent solids, requiring very little or no special dewatering.

Types of Flotation Machines The type of flotation machine is well worth careful study, along with the various other factors previously discussed in this article. It is actual operating results that count, and from long experience on a wide variety of problems the "Sub-A" type of machine has been universally accepted as the standard in the ore dressing field.

Pneumatic machines—As a rule the pneumatic machine gives a low grade concentrate and very little operating trouble so long as it is treating extremely fine feed. It has little if any power consumption in the flotation unit itself, but consideration must be given the power required to compress the air, condition the pulp, emulsify the reagents, and also to elevate the pulp or froth from cleaner and recleaner circuits. Usually in pneumatic installations cleaners and recleaners are always necessary to raise the grade of concentrate. Since air is used in a pneumatic machine not only to produce the desired froth and aeration but also to keep the pulp in suspension and to circulate it, naturally an excessive amount of air is introduced into the pulp. This excess air may, in certain cases, have an oxidizing or chemical effect on the mineral to be floated and thereby modify flotation conditions.

The common trend toward coarser flotation and its advantages generally precludes using a pneumatic machine, particularly on high-specific-gravity ores where grade as well as recovery is important. Coarse mineral pulps with little or no fine mineral are best handled with a mechanical type of machine.

In appraising the cost of a pneumatic machine, the blower and piping and its subsequent upkeep should not be overlooked.

Mechanical machines—The mechanically aerated cell, now the accepted type of flotation machine, has the important advantage of pro-

ducing a high-grade concentrate with maximum recovery, as well as making possible stage adding of reagents wherever needed. In general a mechanical type of machine is very flexible. For selective flotation, particularly where heavy pulps must be handled or where shutdowns may occur, the mechanical type of machine is preferred.

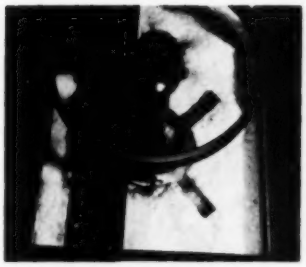
Circulation of pulp from cell to cell by gravity is distinctive. This enables the machine to handle coarse material (example: unit cell in ball mill-classifier circuit) without sanding. In most installations, sufficient air is drawn down the standpipe by the rotation of the impeller beneath its stationary hood or diffuser. This centrifugal action and the passage of the pulp over the rotating vanes of the impeller create a vacuum in the standpipe and a pressure condition near the impeller periphery, thus intimately dispersing fine air bubbles throughout the pulp.

The amount of air required depends on the ore and other factors such as density, reagents, and ratio of concentration. Although in most installations enough air is naturally drawn down the standpipe, there are certain applications where the amount of air has to be increased or even retarded. These conditions may even have to be controlled from cell to cell in a circuit. Cleaners, for example, usually require less air than the rougher and scavenger circuits. Some flotation machines are arranged for this flexible control, and the method of obtaining air and mixing it thoroughly with the pulp is different from any other sub-aerated machine.

It has been definitely proved that air is best introduced into the pulp by centrifugal pressure. Air is beaten into the pulp under pressure. Thus the air, so thoroughly diffused in the pulp, yields small air bubbles with greatly increased carrying capacity per unit of volume. The resultant action is similar to the practice of introducing air or gas into solutions under pressure, a procedure with which we are all familiar as illustrated by the bubbling action of charged soda drinks. It is necessary to break up the air or gas bubbles and introduce them into the pulp when the latter is in a finely divided state. Positive circulation within the cell and from cell to cell without short circuiting insures this condition. A finely divided pulp is less dense, has more surface exposed, and the introduction therein of minute air or gas bubbles yields maximum results.

The amount of air introduced into the pulp depends on the speed and type of the impeller. More air than needed for usual flotation may also be obtained by slightly increasing the impeller speed. It is, however, more economical to operate the impeller at a speed which will insure adequate agitation and then, if extra air is required, add it by means of a low-pressure blower.

Multi-bladed and also double impeller arrangements may be used if intense aerating conditions are desired. In flotation of certain nonmetallics it is essential to control both agitation and aeration and in some instances one or the other, or both, must be kept to the bare minimum.



Star launders are utilized in some cases for froth removal on Denver Sub-A flotation machines.

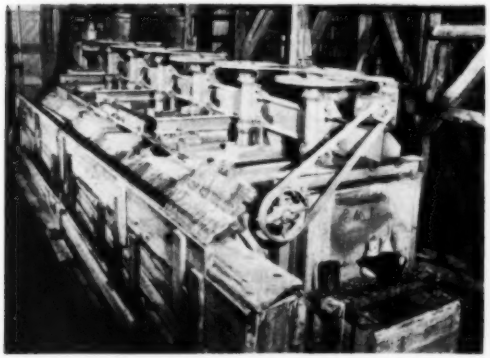
WHAT IS REQUIRED OF A FLOTATION MACHINE?

After conditioning the pulp with the proper reagents it remains for the flotation machine properly to introduce the air or gas bubbles to the mineral to be floated and to remove quickly the resulting froth. The quick removal of the mineral-laden froth is very important.

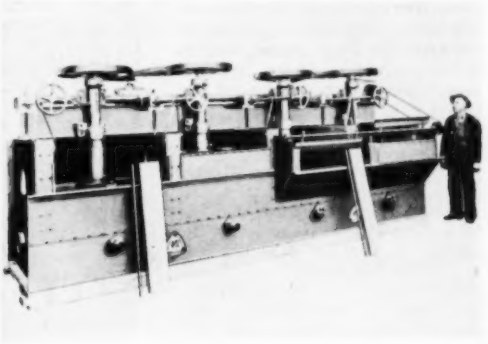
The rule so familiar to all metallurgists, "When your mineral is free, remove it", holds true in flotation, that is, when your mineral is in the froth, remove it quickly. The best rapid removal of froth is by means of paddles, avoiding the crowding or squeezing effect which takes place when the froth is forced over the lip by the displacement of air bubbles below. The froth becomes leaner as the pulp progresses through the machine, thus requiring the changing of pulp levels and aerating conditions to aid in removing the concentrates.

The ability of a flotation machine to handle a wide range of pulp conditions is always a desirable feature. In addition, its maintenance and operating expense must be low. Molded rubber wearing parts, having a life of 6 to 15 times that of hard iron, have contributed greatly towards steady and uniform operating conditions at maximum machine efficiency. Controlled and positive aeration, as previously discussed, enables the flotation engineer to meet the special problems that may arise in any operation where difficult or complex

Special acid-resistant flotation machines, having the parts in contact with the pulp made of wood or rubber, are available. These Denver Sub-A cells process kyanite in South Carolina.



Certain flotation problems call for an adjustable froth overflow as shown below. This is a feature of the new Denver Sub-A flotation machine.



ores or industrial products are being handled.

The modern flotation engineer will thoroughly consider his problem and will choose a machine on the results it will produce. It must be remembered that each ore presents a specific metallurgical problem. After all, the flotation machine is the heart of most modern mills, and the machine which not only has a universal reputation, but can meet the changing factors that occur in any mill or ore should be selected. A machine that has stood the acid test as far as average flotation requirements are concerned and a machine that has kept astride of all modern improvements, merits first and final consideration in the planning and selection of flotation milling equipment.

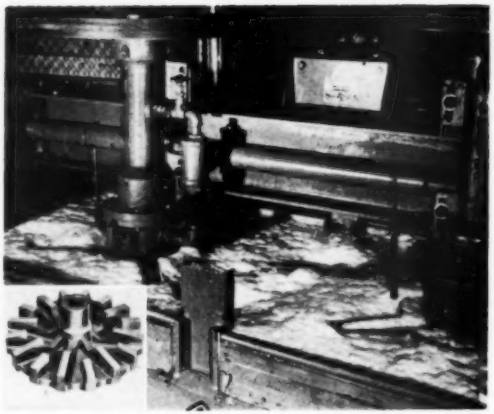
APPLICATIONS OF FLOTATION

Rapid progress has been made in applying flotation to the nonmetallic field such as the flotation of fluorspar, sulphur, feldspar, barite, phosphate, coal, and potash. Flotation is also being used in the preparation and cleaning of raw materials used in the cement, chemical, and other related industries. Its application to fields entirely foreign to ore treatment is receiving wide attention. Outstanding applications in recent years are in preparation and refining food products, paint pigments, paper pulp, rubber, and industrial wastes. Flotation is being successfully applied to removing oil and solids from steel mill waste water and to the recovery of naphthalene from coke oven scrubbing tower cooling water.

MILLING

Milling with flotation is still subject to the same economic laws as it has always been. One of the first of these laws in concentration, "Take out your mineral when free", still applies with flotation as it does in gravity concentration. This leads to the slogan, "Float your mineral as coarse as you can", for the finer you grind after the mesh is reached at which the mineral is free and recoverable, the poorer results will be. Recoveries will be lower, grade of concentrates will be lower, and operation costs will be higher.

The use of the unit flotation cell or cells in the ball mill and classifier circuit has been mentioned before and is a development that is outstanding in modern ore dressing. The advantages secured by removing the mineral at a coarse mesh not only are reflected in greater recovery but also in higher grade of the concentrates and in lower milling costs. Coarse granular concentrates simplify and aid subsequent handling, particularly in filtration, which is usually improved with this type of product. Often coarse unit cell concentrates are treated in amalgamation equipment or in a separate concentrate treatment plant. These concentrates, produced from the average gold ore contain free gold and metallics which can be recovered easily by amalgamation.



Reports from the field indicate increased aeration as high as 100 percent by means of the new multi-bladed impeller, now available on Denver Sub-A flotation machines.

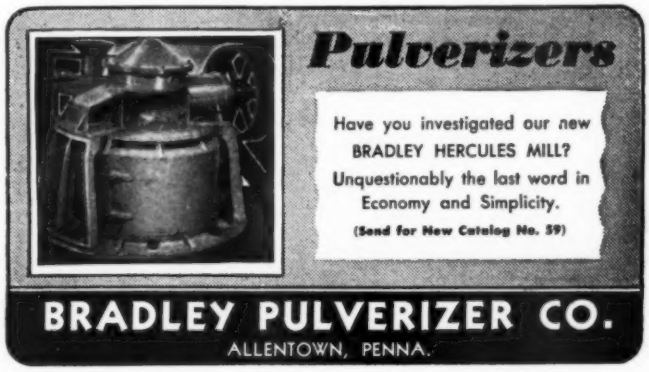
The unit cell has an important application in removing cyanicides in a cyanide circuit. It will remove these cyanicides in a high-grade product which can be shipped to a smelter or treated separately. Reagents or frothers which will not interfere with subsequent cyanide treatment, are used in these cells.

CONCLUSION

Only the general "high spots" of milling, as applied to flotation, have been discussed in this article, and the information has been gathered from many sources. To operators, to managers of many of our large mining companies, to directors of various laboratories, and to mill men who have indirectly contributed this general information on factors affecting flotation, we wish to extend our sincere appreciation. We hope this article will create a further incentive for research work and also for further development in the science, art, and business of flotation, both from a mechanical as well as a metallurgical point of view. One phase must keep pace with the other if real progress is to be made. We have seen the application of this wonderful tool to the treatment of sulphide, oxide, and nonmetallic ores and we know we shall see its introduction in many other fields. . . .

We cannot overestimate the value of the foregoing factors. Only by actual plant operation can one realize their importance, together with standard, proved equipment of proper size and type, so as to get the maximum benefit of these essential features. The old rule, "An hour's delay means no profits today", can also be supplemented by a rule that "A mill is only as strong as its weakest link".

A new high record of salt production in the United States was established in 1950, according to the U. S. Bureau of Mines. A total output of 16,630,000 short tons, valued at about $59,911,340, was recorded.



Fundamentals of Gypsum Calcination

Wolf G. Bauer
Consulting Engineer

PROCESS improvements in industry are often brought about by applying the principles and operating experience of one field to the problems of another. Basic research gives the impetus to the engineers to apply these newer knowledges and concepts to commercial processes, a step which inevitably results in changes of equipment design and operating techniques. Lack of very significant processing advances in applied gypsum technology can probably be ascribed to the absence of agreement among investigators in the identification of the various phases, crystal structures and formation conditions, as well as equilibrium conditions of the calcium sulphate and water complex that makes up gypsum processing technology.

In the case of lime technology we have learned to control physical and chemical properties of calcium and magnesium lime oxides through time-temperature control with special kilns, burners, recirculation systems, and fluidization techniques; and in the case of the hydrates by mixing efficiency, initial and final temperature and steam atmosphere and pressure control, drying, aging, grinding and cooling process conditions to produce and regulate crystal size and shape. More recent knowledge and inferences in basic gypsum investigations certainly point toward a more critical examination of our "standard" and time-worn methods of plaster production, of which the kettle calcining system is one of the best known in this country. We can credit the work of Kelley, Southard, and Anderson of the United States Bureau of Mines, and the excellent review and supplementation of their work by W. C. Riddell for the stimulation toward better applied pyro-processing engineering in the gypsum calcining field for the years ahead.

Gypsum Calcination Forms

We must realize that all phases of gypsum calcining technology deal with the breaking apart and the regrouping of crystals and their cell structure, and especially that of crystal aggregates, and that as a result of the conditions of time, temperature, surrounding gas, catalysts, crystal "seeds," etc., under which this is done, the physical nature of these crystals and crystal aggregates is modified, even though no chemical changes may have taken place.

Crystal Transformations

The operator will, in his studies or readings, come across the term "monoclinic" as describing the crystal system of gypsum and its hydrate forms, and the term "orthorhombic" as designating the crystal system of anhydrite. Without going into an explanation of crystallographic systems, let us point out only that in each of these systems prisms, pyramids, and plate or needle-like forms may appear, in which the monoclinic and the orthorhombic systems are distinguished only by the angle of one of the crystal planes.

As pointed out, gypsum chemistry is one of crystal transformations, and we must think in terms of crystal structures if we are to retain a mental picture of the calcination mechanics of gypsum. It is obvious that if a crystal is formed from a solution or from a liquid phase of the substance as from melts and as in the case of ice from water, such crystals have much freedom to grow to large size, and we have less trouble visualizing the atoms and ions with the mobility to arrange themselves into certain crystal patterns. Yet crystals must also form without an intermediate liquid state, and here it is necessary to visualize the true nature of all matter, whether solid, liquid, or gaseous, namely that the elemental atoms, or groups such as ions and molecules, vibrate continuously at tremendous frequencies, and that the speed of these vibrations is also a function of the temperature or vibration energy level.

Thus even in the solid crystal and in the elemental cell structure which is the building block of the crystal, the calcium and sulphate ions and water molecules vibrate. Since in the solid state they are in their closest position, they vibrate within very strong fields of atomic and molecular attraction forces. In some characteristic pattern certain substances have their atomic arrangement along geometric and symmetrical planes, and the atoms and groups vibrate within this pattern until it is disrupted by excessive vibration due to applied heat. When this happens, the atomic symmetry is lost, and the atomic holding forces are inadequate to hold the highly and erratically vibrating atoms within the pattern. The melting and fluid state is then generally reached.

When certain atoms or molecules vibrate with more freedom than others which are under the influence of stronger attraction forces between themselves, then we have the phenomena of dissociation, in which such "looser" molecules can jump out of their holding fields of attraction by virtue of their high vibration, but at an energy level (temperature) yet insufficient to loosen or dissolve the bond of other types of component atoms or ions. This is the case with the calcination process of gypsum. The two molecules of water may escape altogether if their vibrating energy is high enough. This leaves the calcium and sulphate ions to rearrange themselves somewhat differently. Now it is the manner in which these vibrating water molecules escape, and the violence of vibration that is induced in all the ions, atoms, and molecules that make up the gypsum cell complex, around which the science of gypsum and plaster technology revolves.

It is necessary that we visualize not only this vibration freedom, but also the pattern of the cell arrangement or so-called space lattice of the crystals. Let us keep in mind that what we observe in a high-powered microscope, or in the still greater magnification of the electron microscope, is not the cell (primary group of symmetry with boundary) structure but a tremendously large and repeated aggregate of built-up cells, and that the outlines of these multi-cells form the faces of the smallest crystal that we can see or photograph. In other words, the cells are out of reach of our present grinding process, and it is for this reason that we can identify the crystalline (actually the cell arrangement) structure only through X-ray diffraction lines, which are affected only by the cell or atomic arrangement, and not by the crystal aggregates.

Thus a visible crystal may retain its outline while the cells may have changed physically as well as chemically (loss or addition of atoms or molecules). Calcining a piece of

gypsum and limestone, or a pure crystal thereof, does not necessarily destroy its outward apparent shape. If the process is such that cell rearrangement produces cells of larger volume, as for instance in lime hydration, then there is disruption of the crystal.

Primarily we deal with three basic forms in the system $CaSo_4 \pm H_2O$, namely:

Dihydrate (gypsum) $CaSO_4 \cdot 2H_2O$
Hemihydrate ..... $CaSO_4 \cdot \frac{1}{2} H_2O$
Anhydrite ..... $CaSO_4$

These forms are definite compounds; they have definite crystal associations. There are, however, several sub-forms of the latter two, and these transition forms can best be explained and understood if we continue to think in terms of vibrating atoms, molecules, or ions making up a symmetrical cell pattern for each form, and these cells making up crystals, and these crystals showing certain aggregation and size tendencies which determine the behavior of the product.

Dihydrate Aside from some natural impurities, there are no other differences in the monoclinic prismatic crystals of gypsum, whether the latter is from a fine-grained gypsum rock, the more cleavable selenite mineral, or simply hydrated or set plaster. Nature's form is always the most stable, and generally energy must be expended to change this stable form. The hemihydrate is never found in nature.

Gypsum being monoclinic, it is made up of alternate layers of $CaSO_4$ and H_2O of the unit gypsum cell from which the crystals are constructed. These layers are in the direction of the "C" axis and thus the arrangement is plate-like, and the water:sulphate bond is strong due to the close positioning. The water molecules, in order to escape, must completely destroy this cell structure.

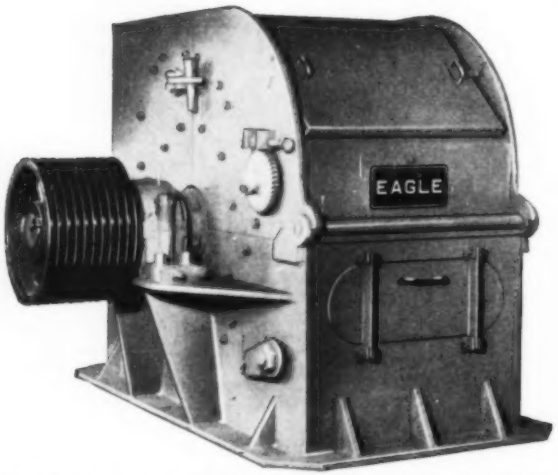
It has been shown that in calcining larger particles of gypsum, such as is done in shaft or rotary kilns, the density of the rock does affect somewhat the properties of the plaster products produced. Below about 65-mesh reduction, the original density plays only a minor role. The rock, being made up of a more or less heterogeneous aggregate of crystals, has a certain amount of pore space and cracks in the misalignment interfaces of the component crystals. This space plays its role in the freedom of escaping vapor, steam back-pressure, and heat differential through the piece.

Hemihydrates The heat of solution and hydration experiments by Southard have established the presence of two forms of the hemihydrate $CaSO_4 \cdot \frac{1}{2} H_2O$, and these were designated by him as alpha and beta types. They have the same crystal or rather cell structure, but their crystal-aggregate form differs, and they exhibit different properties in their physical and chemical behaviors.

Upon heating gypsum and bringing about this disruption of the cell lattice by escaping water molecules, a regrouping into a fairly strong Ca and SO_4 bond occurs. In this new cell structure, the 25 percent remaining water molecules are more loosely held, they have more vibrating space, and therefore are under less influence and attraction force than formerly. This new hemihydrate lattice is also monoclinic. The interesting part of this crystal structure is the fact that the calcium and sulphate atoms and ions have arranged themselves not only into a strongly bonded lattice, little affected by the remaining few water molecules, but also that this lattice has left certain channels in the direction of one plane within which

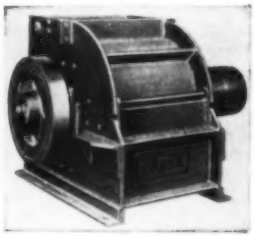
(Continued on page 118)

MAKING AG-LIME IS 'DOWN OUR ALLEY'



EAGLE'S MODEL 36-42 . . . It stands 6' high — weighs close to 19,000 pounds — can turn out the finest *Ag-lime* that can be produced, and in quantities you'll find profitable. Among the reasons operators choose this Eagle is that the size of aggregate (up to 3" stone) can be regulated even while the machine is operating.

SKF self-aligning bearings, high content manganese steel at all wear points—easy access when replacement is required—these and other features add up to real value in this modern hammermill. Send for folder #251-123 for complete specifications.



EAGLE'S MODEL 16x24 . . . A rugged, smaller brother in the Eagle line of hammermills. It's by the originators of one-piece, electrically welded steel crusher frames, has tough manganese wear parts —all reversible for double wear. Everything considered, you'll vote it a superior, more economical producer of *Ag-lime* and other aggregate. Send for Bulletin #1043-124 for detailed specifications—now!

EAGLE
JAW CRUSHERS • IMPACT BREAKERS
PULVERIZERS • CONVEYORS • LOADERS
CRUSHER CO., *Inc.* GALION OHIO·U·S·A

More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. Quarry Blasting the Rockmaster Way. This 20-page manual describes and illustrates eight methods of blasting in quarries with millisecond delay blasting caps. The manual contains machine-gun photographs and methods of shooting to illustrate both progressive and alternate millisecond techniques. The text includes discussions on the principles of millisecond delay blasting, diagrams of eight detonation patterns, and sketches to show the results of delay blasting. Atlas Powder Company.

2. Bailey Air-Operated Combustion Control. Bulletin No. 1023. Automatic combustion control techniques for oil and gas fired boilers are described in this illustrated 24-page bulletin. Photos and diagrams show nine typical firing methods and 16 major control equipment components. Facts and figures are given on more than 300 installations in the U. S. Bailey Meter Company.

3. How to Absorb Shocks on Hydraulically Operated Bucket Loaders and Power Shovels. Bulletin 700. A method of eliminating severe shock and vibration of hydraulically operated equipment such as bucket loaders, power shovels, and similar machines, is described in this 4-page bulletin. Diagrams show the principles and methods of operation of the hydro-pneumatic accumulator. Greer Hydraulics, Inc.

4. Athey Force-Feed HiLoader. Form No. H-1004. This 4-page folder illustrates the many uses of the new HiLoader. Stockpiles, windrows and other collected material is picked up, elevated, and discharged into trucks according to the illustrations. Specifications are given on the back page. Athey Products Company.

5. PD Decantation. Catalog No. 260D. This four-page folder illustrates the features of the Prat-Daniel method of decanting coarse dust by a unique arrangement of a tubular dust collector. This method is suggested for separating high carbon dust from fly ash for refiring. Operation, principles and results are explained in the text. The Thermix Corporation.

6. Ship Concentrate—Not Water. Denver "Standard" Dryer. Bulletin No. D4-B2. A four-page catalog insert that lists a few recent installations of the dryer and that points out some of the applications for them. Photos show types of dryers and give some idea of the diverse industries that use them. A table of capacities is included on the back page while small pictures show the range of products of the company. Denver Equipment Company.

7. The Forney Compression Tester. Bul. 101. This four-page folder illustrates a machine designed for testing concrete block and other materials. The operation is explained and the sizes and models listed. Forney's, Inc.

8. Air Control Lima 1201 Shovel, Crane, Dragline. Bulletin 121-G. The 28 pages of this bulletin are filled with illustrations of this machine in use as a shovel, crane, and dragline. Captions give the location, material being handled, boom length and similar items about the pictures. Photos are used to show the various components of the machine while the accompanying text points out the features not capable of being pictured. Capacities and specifications are given in tabular form. Lima-Hamilton Division, Baldwin-Lima-Hamilton Corporation.

9. Shore Engineered Steam Curing Systems Are Complete and Guaranteed in All Respects. Three pages of this folder present illustrations of steam curing installations and kilns while the text points out the features of the method. The back page is given over to several testimonials. Shore Engineering.

10. Recommended Procedure for the Rock Bit Method of Long Hole Drilling. This four-page bulletin shows the various tools used in long drilling and then describes the use and operation of them. The method of drilling holes up to 150 ft. with tungsten carbide bits and percussion type drills is given. Rock Bit Sales and Service Company.

11. Esick Steel Frame Hoists. Form H51. This folder shows and gives specifications for a line of single and double drum hoists. The various sizes are covered as well as their major characteristics. Esick Manufacturing Company.

12. Williams Heavy Duty Hammer Mills. Engineering Bulletin 672. The 24-pages of this bulletin point out the many types of material that can be reduced by hammer mills, the several types of mills available, specifications for each type, and the recommended applications. Photos show the comparative size of each type while diagrams show the construction and operating features. Hammers, cages, discs, bearings are covered in separate sections while several pages present the feeders, hoppers, air separators, and other accessory equipment used in certain installations. Williams Patent Crusher and Pulverizer Company.

13. Invisible Crystal. This four-page folder is used to present a silicone product for use on masonry to give water repellency. Points covered include: where to use; what it is and how it works; what it does; how it is applied; and how to specify. Wurdack Chemical Company.

14. Centriclone Classifier. This four-page folder is largely pictures. Exterior and cutaway views show the appearance and construction of the device while drawings show other details. Specifications are given and a page of text explains the operation of the Centriclone which is a combination of cyclone and centrifuge. Equipment Engineers.

15. Sly Dynaclone. Bulletin 101. This four-page folder introduces a new method of cleaning cloth bag dust filters by a reverse blast of clean air that dislodges the dust and prevents clogging of the pores. Drawings show the method as applied to the dust collector while the text points out the advantages of the system. The W. W. Sly Manufacturing Company.

16. Tractomotive TL-10 Tracto-Loader. Form 917-5-51. A single-sheet mailing piece that illustrates and points out the

Use This Card—Mail Today

April, 1952

PIT AND QUARRY:

Please send more information on items circled.

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
11.	12.	13.	14.	15.
16.	17.	18.	19.	20.
21.	22.	23.	24.	25.
26.	27.	28.	29.	30.
31.	32.	33.		

NAME

TITLE

COMPANY

ADDRESS

CITY STATE

More Information, Please

features of a tractor-mounted bucket loader while the reverse side gives specifications and dimensions. Tractomotive Corporation.

17. Webster, Pioneering Materials Handling Since 1876. This attractive 36-page booklet presents the story of the company during its ¾ century of activity. Paintings, photos, and text develop the history of the company, show its facilities, and give typical installations. Webster Manufacturing Company.

18. Half-Track Crane. This single page mailing piece illustrates a crane that is mounted on a half-track truck chassis. The controls are located at the driver's seat and are handled by him. Other features of the machine are described. The reverse side lists various trucks. Zeligson Truck and Equipment Company.

19. Stedman Dyna-Matic Vibrating Screens. Bulletin 514. This six-page folder covers the types "MHD" and "HD" vibrating screens. Pictures and drawings present the features of these positive, circle throw types of screens. Text covers development, adaptability, construction and shaft assembly, while charts give sizes and capacities. Other types of vibrating screens are mentioned. Much helpful information is included. Stedman Foundry and Machine Company.

20. Transall Sectional Low Head Belt Conveyor. Bulletin 202. This folder presents the story of a sectionalized conveyor that is adapted to mining, stripping, and similar operations where frequent changes of a conveyor may be necessary. The head and tail sections are shown and described while a drawing gives a typical layout. Photos point out the ease of moving the idler sections. Transall.

21. A "Datalogue" on Preventing Leaks. Form 4128. This six-page folder uses small drawings and text to present graphically the application and uses of an iron containing waterproofing agent for masonry walls. The folder attempts to answer all of the questions that might arise about the product and to give directions for use. The Euclid Chemical Company.

22. Stebbins Concrete Air Entrainment Meter. This folder pictures a device for measuring the air entrained in concrete. Also pictured are the results of air entrainment in concrete test specimens. One page tells of the advantages of using an air meter and also points out the features and prices of the two sizes made. Stebbins Manufacturing and Supply Company.

23. Ty-Electric Heated Screens. Heated screens are covered in this folder. Photos show typical installations on several models of screens while the text covers the problem, application, and results of electric heating of screens. The W. S. Tyler Company.

24. Rust-Oleum Stops Rust. Form 251. This sixteen page booklet gives detailed information and technical data on a line of rust preventive coatings. Applications, resistance qualities, drying time, thinners and special applications are included about each product. Color chips show the range of colors in each product and aid in selecting the material that will look best as well as protect the surface. The arrangement is semi-tabular and adds to the ease of locating specific information. Rust-Oleum Corporation.

25. Steam for Ready-Mix Concrete. The uses of steam in providing hot water and heated aggregates for cold-weather operation of ready mixed concrete plants are pointed out in this folder. Models of machines used for generating steam are shown. Capacities, steam requirements and specifications are given in tabular form. Littleford Bros.

26. Buda Earth Drills. Bulletin No. 1406C. The use of the earth drill in making holes for blasting, prospecting, testing, and many other purposes are pointed out in this folder. The five models are pictured and their uses and capacities are listed. The Buda Company.

27. Dynamatic Water-Cooled Couplings for Adjustable-Speed Drives. Bulletin WC-1. This 16-page booklet deals with the company's line of electro-magnetic eddy-current couplings of the water-cooled type. The theory of eddy-current couplings is explained by text and drawings, and the adjustable-speed characteristics are brought out. Application of the water-cooled coupling is given and photos show typical installations. Dimensions, operating efficiency, construction and cooling details, and controls are all covered by text and suitable illustrative material in the form of drawings, charts, photos and tables. Dynamatic Corporation.

28. The Maxon "Ajitator". Form L-115. A mailing piece that presents the newest concrete hauling unit made by the makers of Dumpcrete units. This piece gives the essential information on the new machine and points out the advantages and features. No attempt is made to cover the machine technically but only to present the main features so that inquiries can be obtained. Maxon Construction Company.

29. American Crawler Crane. ¾ Yard Capacity. Catalog No. 700-G-21. The eight pages of this bulletin use photos to show the various attachments of the machine—shovel, crane, dragline, and pullshovel. The operating mechanism is shown and the features pointed out. Specifications and capacities are listed. American Hoist and Derrick Company.

30. Featherlite Facts. Number 3. This issue of a magazine type advertising booklet contains illustrations of buildings constructed with a lightweight expanded shale aggregate made by the company. Homes, hospitals, schools, apartments, stores, offices, lodge halls, and hotels are included in the illustrations. Facts on the aggregate and its uses in concrete masonry, precast slabs, and joists are given. Features of the material are explained and numerous tables give pertinent data. The Featherlite Corporation.

31. Transo DeLuxe Mixers and Agitators. Form 521. Features of the Transmixer are shown by means of a large photo and explanatory text. Features not shown on the photo are pointed out by the text. The specifications and dimensions are shown on the last page by means of a table and drawing. The Transmission and Gear Company.

32. Supremix. This folder uses sketches to show the features of the company's mixing and batching plant. The brief text lists important points in connection with the sketches. Supremix Inc.

33. Rustshield 2. This four-page booklet describes a phosphatizing treatment for rustproofing moving metal parts with oil-retaining surfaces. Parts that benefit by treatment are shown as well as the equipment used in the process. The text describes the material and gives directions for use. Octagon Process Inc.

Pit and Quarry

FIRST CLASS
PERMIT NO. 44
(Sec. 34.9 P. L. & R.)
CHICAGO, ILL.

BUSINESS REPLY CARD

No Postage Stamp Necessary if mailed in the United States

3 CENTS POSTAGE WILL BE PAID BY

Pit and Quarry Publications

431 South Dearborn Street

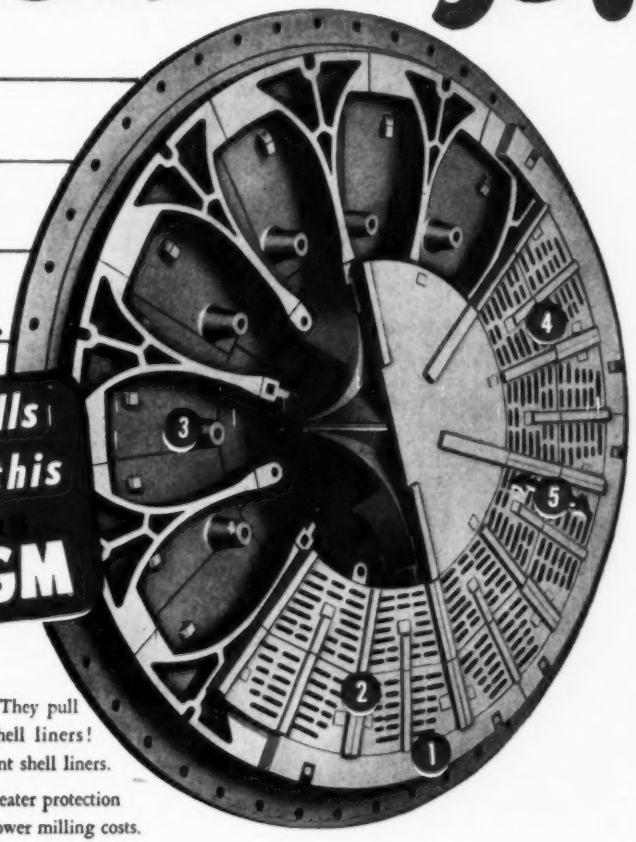
CHICAGO 5, ILL., U.S.A.

Big Savings!

IN...

- ✓ DOWN TIME
- ✓ MAINTENANCE MAN-HOURS
- ✓ REPLACEMENT PARTS COSTS..

On Grinding Mills Equipped with this ALLIS-CHALMERS DIAPHRAGM



1. EASY TO REMOVE PLATES — They pull straight out without disturbing shell liners! Filler bar is same height as adjacent shell liners.
2. THICKER GRATE RIBBING — Greater protection against wear . . . longer life and lower milling costs.
3. SPECIAL BOLT PROTECTION — Diaphragm bolts are heavily shielded against abrasive action of discharging material.
4. LONG LIFE — Made of abrasion-resisting alloy steel.
5. FLEXIBILITY — If ever desirable, you can conveniently change your mill operation from low level to intermediate or to full grate discharge by a simple replacement of plate halves. A-3624

Get more facts about this new, improved grinding mill diaphragm from the A-C representative in your area. Or write Allis-Chalmers, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Hammermills

Gyratory Crushers

Jaw Crushers

Grinding Mills

Vibrating Screens

Kilns, Coolers, Dryers

Gypsum Calcination

(*From page* 114)

the vibrating water molecules can migrate and escape whenever their vibration is increased by heat.

A rather loose but delicately-balanced crystal system, such as that which exists between stable gypsum on the one end and stable or insoluble anhydrite at the other end, would become very confusing if we could not visualize the mechanics of transformation and water interchange. Continued heating of the hemihydrate above the boiling point of water will cause most of the remaining water molecules to "bounce" out of the crystal lattice without affecting its cell structure. A slight unbalance in heat and vapor pressure condition may again reverse the process, and the H_2O molecules will re-enter the cell. So there is a unique crystal system that can take on or eject these loosely-vibrating water molecules which we term "chemically bound" water within certain temperature (vibrating energy) and pressure (frequency of colliding contact with outside water molecules) conditions and limits.

It is only after certain time-temperature limits are overstepped that the new orthorhombic cell and crystal arrangement of the insoluble and stable form of the anhydrite $CaSO_4$ is reached, and a strongly-bonded and closely-packed lattice of Ca and SO_4 is formed. Anything between monoclinic gypsum and orthorhombic anhydrite must therefore be considered transitory and unstable. These forms are alpha and beta hemihydrate and lower-than-hemi forms called alpha and beta soluble anhydrites which still contain isolated molecules of water, but in which the Ca and SO_4 arrangement has not yet aligned itself to the densest and stablest cell pattern.

The commercial calcination process produces all four forms and intermediate combinations which can coexist for the simple reason that each particle of gypsum could not be heated in the same time and at the same temperature, since a heat "driving" force must be established to transfer heat from a hotter to a cooler particle, or from a hotter particle-surrounding gas to a cooler particle-surrounding gas envelope or cooler particle.

Southard determined from controlled experiments that certain calcining conditions would produce alpha type, and others would produce beta type hemihydrate forms.

Alpha hemihydrate is produced from gypsum by heating under these conditions:

1. Contact with liquid water or saturated steam at low dehydration temperatures above 207 deg. F.

2. Contact with liquid water or saturated steam whose "activity" has been lowered by an inhibiting agent such as dissolved salt or other compound, and where calcination can then proceed at a lower-than-normal calcining temperature.

3. Positive pressure of added or self-generated steam at lowest temperature differential between heating gas or heating surface and the gypsum particles, and which requires more calcining time. (This would reduce the capacity of the old-style kettle considerably.)

Alpha hemihydrate exhibits the following properties:

1. The crystals are large and more compact prismatic.

2. The crystals are densely packed and aligned within the structure and spaces of the original gypsum crystals and aggregate; thus there are fewer crystals and less crystal surface per particle volume than in the beta type.

3. The alpha form is more stable and less active toward water.

4. Possessing less crystal surface, this form requires less wetting water to produce working consistency, and therefore reaches greater setting strength.

Beta hemihydrate is produced from gypsum by heating under these conditions:

1. Fast heating rates which require a higher temperature differential between the gypsum mass and the heating gas or surface; (for example, particles that are in contact with highly-heated kettle steel or with gases in rotary kiln; and flash-heating mills).

2. Rapid dissociation due to minimum back pressure from outside water molecules in surrounding atmosphere, *i.e.* dryer calcining conditions, preferably under vacuum.

Beta hemihydrate exhibits the following properties:

1. Rapid dissociation causes internal vapor pressure that will disrupt the original dihydrate cells so violently that subsequent crystal growth from the newly-formed hemihydrate cells is continually being interrupted, causing small and more heterogeneously-arranged and oriented crystals to form.

2. This looser, scaly, micro-crystalline structure of the hemihydrate particle designated as beta type, has obviously a greater interior surface area, and therefore requires more water for workability. Greater plasticity is characteristic. The large amount of required working water produces a set plaster of lower strength (75 to 80 percent lower than alpha).

3. The great surface area provides this hemihydrate with a higher activity, solubility, and therefore lower stability. Given proper conditions and time, re-crystallization to the alpha form takes place.

4. Beta type hemihydrate sets more slowly than alpha, and with less expansion. It should be obvious that in the case of board drying, these listed properties all affect fuel economy, drying time, and dryer capacity adversely.

Anhydrites Anhydrite, meaning "waterless," has been identified as of two kinds, a soluble and insoluble calcium sulphate. However, some differences in the characteristics of both the soluble and the insoluble anhydrite have been noted and related both as to the source and the method of dehydration. According to Southard, an alpha and a beta soluble anhydrite is formed under the same extreme conditions of time, temperature, and steam or vapor pressure (partial) as those which distinguish the formation of alpha and beta hemihydrate, these latter evidently representing intermediate dehydration stages.

The alpha form of anhydrite retains a very small percentage of water, *i.e.* not over 0.05 percent, while the beta anhydrite will show up to nearly 1 percent. Only after heating to well above 1600 deg. F. for some time will the soluble form change over to the insoluble anhydrite. The soluble forms take up water easily to change back to the hemihydrate forms, while the insoluble type takes it up only very slowly.

Early investigators have termed this soluble anhydrite in various ways. Thus D'Ans called it half or hemi-anhydrite, Späth termed it Anhydrite III, and Van't Hoff soluble. It has been only since Southard's and Kelley's investigations that the distinction between an alpha and beta type was made, and that these types are simply lower water forms of the equivalent hemihydrates. Thus we have what is probably a true solid phase recrystallization without complete destruction of the cell lattice *via* liquid solution. The soluble anhydrite is evidently also monoclinic, although the actual crystal form has not been determined because of the small size of the crystals. Alpha type can be ob-

tained at relatively low temperatures of around 230 deg. F. in an atmosphere of steam or vapor by further dehydration of the alpha hemihydrate, while beta hemihydrate heated between 300 and 390 deg. F. will lose most of its remaining water to form finally beta soluble anhydrite.

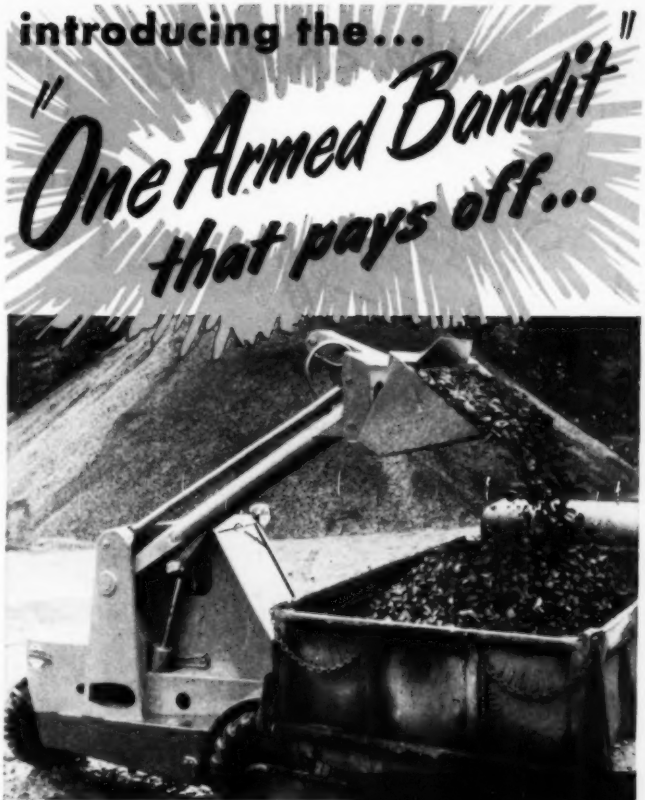
From these observations it would appear that commercial stucco or plaster is certainly a mixture of both types of hemihydrates and anhydrites, and that the ignition loss and calcium analysis of a sample does not necessarily give an exact clue as to the type and amount of these crystals and forms. It would show that two plasters calcined from the same gypsum may have equal water contents, but have very dissimilar properties. This is borne out in practice, as operators well know.

The insoluble anhydrite is the stable form. It is dense, of orthorhombic crystal system, *i.e.*, it now has greater symmetry, and it contains no water molecules. Being stable and of definite crystal structure, it occurs also in nature. When formed by heat recrystallization from the intermediate hydrates, temperature must be elevated to above 1,600 deg. F. in order to complete the crystallization process within commercially allowable time periods, even though the change from monoclinic to orthorhombic can take place at lower temperatures. Increased heat removes all the remaining isolated H_2O molecules, which were responsible for holding the Ca and SO_4 atoms and ions within certain cell lattice arrangement. The eventual complete removal of H_2O, plus the increased weakening of the sulphate bonds due to higher vibration energy causes the cell components to become more and more mobile or "fluid," until finally the cell arrangement drifts into a more compact and symmetrical structure. Thus the transformation of the soluble anhydrite to the insoluble form can be likened to a stress-relieving or annealing process. A second form of insoluble anhydrite is sometimes recognized, and although this form is crystallographically identical, it is physically somewhat denser and heavier, and is produced by high-temperature heating above 2,180 deg. F., which produces a dead-burned form.

MECHANICS OF KETTLE HEAT TRANSFER

Unlike the heating process taking place in directly-heated rotary kilns and calciners, as well as flash cal-

(*Continued on page* 122)



MODEL H SCOOPMOBILE
FULL HYDRAULIC
FRONT END LOADER

Shovel, Load and Transport All Types of Bulk Material

The Model H SCOOPMOBILE with full hydraulic steering lift and bucket control is an outstanding material handler. Built for hard work, it gives top performance under all conditions. Planetary drive with 3-to-1 reduction ratio gives dependable power for all operations. Conveniently located finger-tip controls give the operator in cab full-vision command of every movement. Vickers hydraulic power steering gives positive control and lessens operator fatigue.

The versatile Model H SCOOPMOBILE with ¾ cu. yd. scoop has rated lifting capacity of 4,000 pounds and standard dumping height of 8 feet. Quick-change attachments include swivel-type concrete hopper, lift forks, special fertilizer or hay fork, and crane boom...and make the Model H SCOOPMOBILE an efficient multi-purpose unit.

EXTRA-LOW IN INITIAL COST... EXTRA-HIGH IN EFFICIENCY

Write for literature and name of your nearest Mixermobile dealer.

MIXERMOBILE DISTRIBUTORS

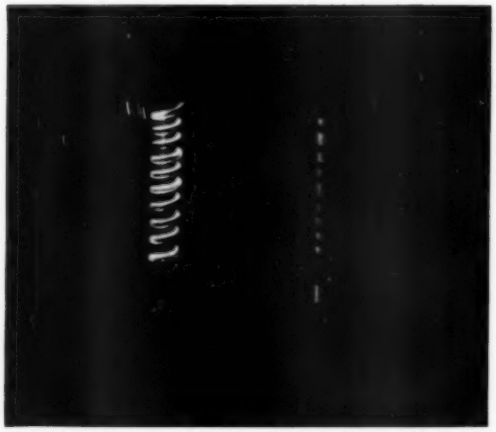
MIXERMOBILE • SCOOPMOBILE
STATIONARY MIXERS • DUO-WAY SCOOP
LIFT TRUCKS • TOWERMOBILE
TELESCOPIC LIFT • STATIONARY TOWER

Box 7527 • Portland 20, Oregon

the spike test proves it!

PS Shielding*

American PS Shielded Cables are perfect for aerial lines. Tree trimming is practically eliminated. Corona troubles vanish . . . along with television and radio interference.



Here's a good example of the way PS Shielding prevents corona formation. The conductor on the left is insulated with unshielded "ozone-proof" rubber. But the PS Shielded Cable on the right is completely free from corona.

PS Shielding is so flexible, light and small that it is easy to manhandle over support rigs in the most rugged country.

PS Shielding provides an extra margin of safety when cable must be dragged over sharp rock and when it must be handled by workers.

UNITED STATES STEEL

by itself is a safety measure

***an original development of American Steel & Wire Division**

● There's an easy way to prove the effectiveness of PS Shielding. Just drive a spike through the PS conducting rubber tape into the copper conductor *without touching the ground wires.* Your breakers will trip every time, proving that PS Shielding *alone* is an outstanding safety measure for the protection of all who handle your cable.

Naturally, the PS grounded tapes can't carry heavy currents, so they're usually used in combination with ground wires. But PS Shielding will easily handle the circumferential current of the cable. In other words, it will do everything that metallic shielding will do *with these added advantages:*

Prevents Corona Discharge—PS Shielding is so flexible that it never pulls away from the insulation. This is in sharp contrast to metallic shielding which often separates from the insulation when the cable is bent. Each of the resulting gaps is a serious danger point since it may cause spark discharge plus the inevitable corona and ozone formation.

Easy to Splice—PS Shielding is available in rolls. For most splices you can apply your shielding to the splice just like ordinary insulating tape.

Reduces Bulk—PS Shielding has less bulk and weight than metallic shielding. Consequently, the cables are lighter, smaller, and in general—easier to handle.

Increases Cable Life—PS Shielding is so smooth and pliable that it won't chafe the insulation or jacket. There are no fine wires to break when the cable undergoes hard usage.

For the full story on PS Shielded Cables, get in touch with your nearest American Steel & Wire Division office.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES, CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S American Electrical Wire & Cable

UNITED STATES STEEL

Gypsum Calcination

(*From page* 119)

cining mill systems, the gypsum kettle heats the material indirectly by conduction of heat through steel walls. Since the evolution of steam from the finely-ground gypsum rock acts to fluidize the kettle content, the mass becomes fluid and acts as a liquid. The rising steam lifts the particles, which undergo a hindered settling and teetering action, and the original charge will have expanded upward several feet.

Since the escaping steam is the only gas filtering and bubbling up through the kettle charge, it is evident that the gas velocity increases, and the mass density decreases upward as more steam is added in the higher zones. Due to paddle stirring action and large bubble action, some particle mixing in a vertical direction takes place, and some fresh steam and air can find its way into the lower sections.

In the cycle of calcining a kettle batch, the kettle surfaces, *i.e.*, kettle bottom, sides, and kettle cross flues are heated by the products of combustion gases through convection, as well as considerable radiation, and in turn heat the gypsum particles and steam on the other side. Thus the problem is two-fold: (1) effectively to transfer heat from a gas to a smooth steel surface; and (2) to abstract this heat from the steel to the gypsum particles. During the various stages of the kettle operation, equilibrium conditions are never quite reached; so it is necessary to divide such a batch process into several stages, and analyze each stage separately for clearer understanding.

Filling Stage Ground gypsum of minus 100-mesh fineness is fed to the kettle calciner from a feeder over a period of time. This feed material is usually cold, although there may be some residual heat if a drying operation preceded or accompanied the grinding or pulverizing. The gypsum is fed into the empty heated kettle, the particles which come to lie against the hot steel bottom and sides being heated very rapidly, and at first transmitting very little heat to the immediate overlaying layers. Dehydration commences immediately from these first steel-contacting layers, and the water vapor and steam therefrom filters upward through the cooler mass of gypsum powder. This raw powder absorbs the steam and vapor on its surfaces and in its void spaces, producing some mechanical wetting, which makes for a heavier mass that is more difficult to stir and agitate. In extreme cases this can lead to so-called "stuck" kettles.

The kettle thermometer or thermocouple measures only air-steam temperature, and this temperature is far below that of steel surfaces and that of the superheated steam or contacting particles which transmit their higher heat to the whole mass so measured.

Thus we have uneven heating of a rather dense mass of air-gypsum-vapor. The temperature of heating gases outside the kettle is generally raised during this filling stage, and the temperature differential and heat transfer rates at the steel surfaces are high, particularly at the kettle bottom, which receives maximum convection and radiation heat.

Boiling Stage In the initial filling and heating period, fluidization or boiling is reached after most of the entrapped air has been saturated and then displaced by the increasing steam evolution. At this stage of boiling the steam or gas phase transfers much of the heat through the mass from hot steel to cooler particles. It is evident that thousands of collisions must take place between the minute particles of the kettle charge, as well as direct contacts between the particles and a hot steel surface. There is then both convection and conduction heat transfer.

Some particles will be overheated or heated very rapidly, others will experience a more gradual heating, while others may be both heated and then cooled at rapid continuous intervals, depending on whether they are suddenly exposed to a rising current or a bubble of superheated steam from near a hot surface or whether they contact the surface itself. Some portion of the mass of particles will find and come to remain for various periods in relatively little-disturbed corners and eddies near hot steel, in which locations they will be dehydrated to beta anhydrite or hemihydrate at high temperatures not indicated by the kettle thermometer. This can happen more extensively toward the end of the first boiling period, when the partial pressure of the steam is being reduced, and mixed with more and more entrained air from the surface.

Now it should be apparent from the foregoing that the higher the steel surface temperatures for heating the kettle charge, the faster will be the heating rate, the more beta type hemihydrate and anhydrite will be produced, the shorter will be the required calcining cycle, and the shorter will also be the life of kettle steel in contact with the heating gases. Furthermore we can readily understand that if the heating surface is restricted per ton of kettle charge, either a reduction in kettle output per day will result, or higher steel temperatures will be required to uphold the output. If a kettle is therefore driven to near its safe operational capacity, there is little leeway left for controlling the properties of the product. The expedient of adding salts such as calcium or sodium chlorides to the charge have lowered the dissociation temperature, but this may also bring about some disadvantages in certain products and their uses when such salts are present.

Finishing Stage The subsidence of the first boil action may be very pronounced in one kettle, while in another the exact boundaries between the end of the first dehydration and the beginning of anhydrite formation may not be so apparent except by the temperature record. It should be realized that the second boil or dehydration of the hemihydrate can and will take place coincidentally with the first stage, and that the amount of such water loss is a function of time, temperature, agitation, kettle construction, heating rate, steel temperatures, steam back-pressure, fineness modulus of ground gypsum, and type of stone.

As the heat requirements of the first stage of the dehydration period are being satisfied, the mass temperature rises automatically, and the bulk density increases somewhat. There being less heat abstracted from the steel surfaces, the steel temperature will also rise unless the fuel is cut back, which is the general procedure. The length of time of "coasting" on stored-up heat from refractories depends on the thermal flywheel effect of the system, as well as on the draft control arrangement provided.

Cooling Stage The mass of "stucco" leaving the kettle for the hot pit must be considered a mixture of alpha and beta hemihydrate and derived forms of anhydrite dispersed in a mixture of vapor-carrying entrained air and super-heated steam. At the high discharge temperature of about 350 deg. F., and during the period of time the particles remain in the pit while slow cooling takes place from the outside of the mass toward the

hotter center, further reactions toward equilibrium conditions take place. In view of the known reaction temperatures of the systems, it is only logical to suspect—it is often readily noticeable—that any hot hemihydrate will continue to give up water vapor. This vapor may in turn be absorbed by any cooler soluble anhydrite to form hemihydrate, or by any cooler hemihydrate to form dihydrate or gypsum. Thus we may explain the caking, scaling, and crusting of set stucco along any cool parts of the hot pit.

Water vapor from the still-entrapped steam is also a contributor here as the fluffed mass begins to settle. It is well known to mill operators that such formation of dihydrate, should it scale off and find its way into the paster mill, will drastically change the plaster setting speed.

So here again, as in the case of the kettle, we have apparently not succeeded in controlling the thermal, atmospheric, and crystallization history of each particle of gypsum to be processed, and a great deal of applied science and engineering is yet to go into effect in the whole control picture of gypsum processing. Meta-stable and sensitive as are the soluble anhydrites and the hemihydrates, their proportions, their heating and cooling, and the nature of the atmospheric surrounding them during these forming and recrystallization stages, we must still admit that the calcining and cooling process remain more of an art than a science.

MAKING USE OF OUR KNOWLEDGE

What conclusions can be drawn in reviewing the known and discussed chemical-crystal relationships and the conditions obtaining in commercial practice? Some of the answers to this question have been obtained recently on a commercial scale extending over a year's operation. The indications are as follows:

1. The calcining device must possess maximum steel surface in order to make possible the use of heating gases of low temperature to minimize overheating a minimum portion of the gypsum particles which must transmit heat from steel to the bulk mass.

2. The concentration and pressure of steam surrounding the dehydrating mass must be under control to produce the desired crystal transformations and predominant characteristics.

3. The cooling stage must be a controlled conditioning stage, and must be considered a more definite part or phase of processing toward completion.

4. The process of batch calcining under kettle-similar conditions would be considerably improved in the matter of controlling product quality and characteristics if it were made continuously.

The writer wishes to express his indebtedness to Western Gypsum Products, Ltd., and to Columbia Gypsum Products, Inc., for the cooperation and opportunity given to correlate and apply the newer calcining knowledge to commercial operations. Such assistance has made possible the presentation of these signposts toward improved calcining practice to the readers of PIT & QUARRY who are associated with the gypsum industry and its problems.

EDWARD O. SCHNEIDER, sales manager for the Ottawa Silica Company, Ottawa, Ill., sinse 1923, died of a heart attack on January 25. He was 60 years of age. Mr. Schneider was instrumental in the organization of the National Industrial Sand Association.

HARRY R. HAYES, 66, secretary and engineering director of the New York State Crushed Stone Association, Inc., died on March 6 in a hospital after a heart attack.

WILLIAM MOELLER, 75, retired general superintendent of the Lone Star Cement Corporation's Western Division, died at his home in Dallas, Tex., on February 24, after a brief illness. Mr. Moeller joined the Lone Star firm in Houston in 1915; it was then known as the Texas Portland Cement Company. Two years later he moved to Dallas with the company. He was a member of the Dallas Technical Club and the American Society of Mechanical Engineers.

STEVE GLAVOSEK, 68, an employee of the Union Sand and Supply Corporation, Painesville, O., died on January 24 of internal injuries received when he slipped and fell under a moving conveyor at the plant.

WALTER P. BERG, 60, vice-president and director of the Dravo Corporation, Pittsburgh, died unexpectedly in a Pittsburgh hospital on February 3.

Mr. Berg, who had been associated with the Dravo Corporation for 30 years, also was a member of the firm's executive committee and general manager of the Machinery Division. In addition, he was president and director of the Dravo-Doyle Company, and a director of Union Barge Line Corporation, Tri-Lock Company, and the Southern Transfer Company, Memphis, Tenn. He was a brother of the late J. D. Berg, who was chief executive officer of the Dravo Corporation at the time of his death in 1949.

LAWRENCE W. WEBB, 49, an employee of the Klinker Sand and Gravel Company, Seattle, Wash., was the victim of a fatal traffic accident on January 22.

WALTER E. BOWE, northern New England sales manager for the Dragon Cement Company from 1943 to 1950, died at his home at Thomaston, Me., on January 5 after an extended illness. Mr. Bowe, who was 67 years of age, had been retired since July, 1950.

His association with Dragon cements began in 1924 at Boston. In 1943, he moved to Maine and maintained offices at Thomaston and later at Augusta. He was a director of the Maine Good Roads Association.

ARTHUR W. GROSS, 57, manager of the Quality Sand Company, Milwaukee, Wis., for the last ten years, died on January 29. He had been ill for several months.

THOMAS STEELE ALLAN, 65, president of the Missisquoi Stone and Marble Company, Ltd., Montreal, Canada, died recently in the Montreal General Hospital. Mr. Allan was a prominent figure in the building construction industry in Canada, and was a director of the Interprovincial Brick Company, Ltd., Montreal, and a member of the Builders' Exchange Club of Montreal, and the Canadian Construction Association.

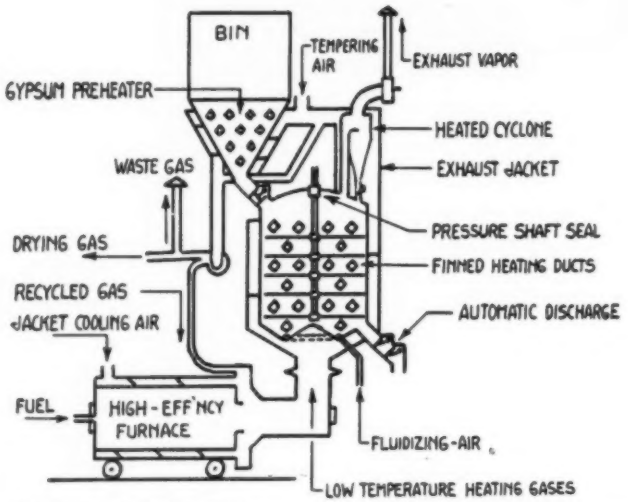
HENRY W. MILBURN, 72, yard manager for the Stewart Sand and Material Company, Kansas City, Mo., died after a sudden illness at his home on February 19. He had been employed by the Stewart firm for 40 years.

WALTER F. ROGERS, 55, owner of the Minnesota Lime Company, Stewartville, Minn., died on February 19.

new machinery and supplies

PIT AND QUARRY

CONTROLLED-HEMIHYDRATE GYPSUM CALCINING SYSTEM



● Gypsum Calcining System

General Machinery Company, Spokane, Wash., is marketing a new type of gypsum kettle system designed by Wolf G. Bauer, consulting engineer, that incorporates structural design improvements, and also employs the latest scientific processing principles for producing controlled alpha-beta hemihydrate plaster.

The new kettle and system has a high overall production efficiency, as well as quality and control of product. Heat is generated in a small high-heat release furnace separate from the kettle. The kettle is hung from four steel supports and a frame without affecting jacket, furnace, or drive by thermal expansion. The minimum of insulating refractory is used for linings, and no radiant heat from the furnace reaches the kettle bottom or kettle ducts. The kettle, with its double-cone stainless-clad non-scaling steel bottom and diamond-shaped heating flues or ducts, is welded into one piece without caulking or expansion joints in the ducts. Heating gases travel in two independently controlled sections through the kettle heat exchangers. The many small-bore cross-flues are finned and self-cleaning, and present a large heat-exchange surface that allows operation at low beneficial temperatures without sacrifice in capacity. The multi-bladed agitator also has finned blades intermeshing the flue fins for high heat exchange with turbulence.

The exhaust steam and air is pulled through a cyclone collector enclosed in a jacket containing the exhaust heating gases, maintaining the cyclone above dew point temperature and keeping it clean. The collected dust from the kettle and the hot pit automatically return to the kettle. The heating gases leaving the kettle and cyclone then pass under controlled temperature conditions through the gypsum preheater, a portion being re-cycled to the furnace for producing high-velocity low-temperature heating gases with minimum fuel, while another portion can either be vented or used for drying raw gypsum before or during grinding.

Operation of the kettle is improved by a small compressed air system which allows filling the kettle in two or three minutes. It serves to fluidize the batch prior to dehydration and boiling whenever power rises above a pre-set value. This air supply also operates the charging and discharging double-lock gates automaticallly without binding, as air jets clean the gate seats. The kettle is closed to the atmosphere, and the self-generated steam and low pressure is controlled as required for plaster quality, there being a seal gland on the vertical agitator shaft. Drafts, heating gas and fuel, gypsum temperature, kettle pressure and atmosphere, and time cycle are all controlled either manually or automatically from an instrument board. Experience has shown insignificant maintenance costs as a result of low operating temperatures, and has proved that a product having certain desirable and adjustable characteristics can be produced at will, and at a high kettle capacity and efficiency.

● Automatic Oiler

An automatic oiling system for use on conveyors, chains, and similar places has been developed by the Oil-Rite Corporation, 2346 Waldo Blvd., Manitowoc, Wis.

The system consists of a reservoir of ½-pint to 1-gal. capacity in lucite, glass or aluminum. The reservoir is connected to a solenoid valve that is open only when energized, and is usually connected across the line of the driving motor. This permits the oil to flow into the line only when the equipment is operating. The oil line feeds to one to 24 Angle Sight feed valves which are individually regulated to drop a constant quantity of oil to the bearings. The system utilizes gravity flow and needs only to have the reservoir higher than the highest feed valve. It is claimed that this system is able to offer automatic oiling in an inexpensive and efficient manner.

Two appointments were announced recently by spokesmen of the Thermoid Company, Trenton, N. J. A. F. Matheis has been appointed assistant sales manager of industrial rubber products. Carrol Hall, former project engineer, has been appointed assistant factory superintendent of the Essex Rubber Co., a Thermoid subsidiary.

Nopco* Chemical Company—forty years in the business of supplying industry chemicals for numerous applications, and today selling $20,000,000 worth of chemical products—now offers its new, scientifically developed air-entraining agent, NOPCO ERTRANE C.

This agent has been subjected to a series of rigid tests by the fully qualified laboratory of E. L. Conwell & Co., Philadelphia, and has met all eight requirements of Specification C226-50T.

This means that—

Nopco Ertrane C is a fully accredited air-entraining agent for use in the manufacture of air-entraining cement made in conformance with ASTM SPECIFICATION C175-50T—the specification reflecting the current policy of Committee C-1.

The results of exhaustive tests have proved conclusively that air-entraining portland cement employing Nopco Ertrane C assures concrete of good strength and excellent durability. And look at these added advantages:

EASY, ECONOMICAL HANDLING—It is only necessary to add Ertrane C to water and stir until dissolved. No control testing required. Thus considerable savings in time and labor are realized at the mill.

IMPROVED PLASTICITY—Ertrane C not only provides excellent durability and plasticity (through air formation) but imparts qualities that *increase workability and placeability.*

IMPROVED WATER REPELLENCY AND STORAGE LIFE—Owing to its composition, Ertrane C gives *more water repellency* than straight resin soaps —helps to prevent cement from caking in storage.

GOOD COST PERFORMANCE RATIO—On a cost/performance basis, Ertrane C is the *most economical* air-entraining agent on the market.

Ertrane C is immediately available, in any quantity, from Nopco's plants at Harrison, N. J., Chicago, and Cedartown, Ga.

Profit by filling out the attached coupon and getting full information about Ertrane C—the new air-entraining agent that actually surpasses the requirements of ASTM Specification C226-50T by impressive margins in virtually every instance.

NOPCO TRADEMARK EVOLVED THRU RESEARCH

NOPCO CHEMICAL COMPANY

HARRISON, NEW JERSEY

Branches: Boston • Chicago • Cedartown, Ga. • Richmond, Calif.

*Reg. U. S. Pat. Off.

NOPCO CHEMICAL COMPANY
Harrison, New Jersey

Gentlemen:

I am interested in learning more about Ertrane C. Will you kindly—

- ☐ send me further details—including full report of tests made by the E. L. Conwell Co. laboratories.
- ☐ have your representative call.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

● Heavy-Duty Lift-Truck

The Clark Equipment Company, Industrial Truck Division, Battle Creek, Mich., was recently given the problem of moving 800 pieces of heavy machinery from 185 railway cars and 40 highway trucks. The machinery, which was being moved from warehouses to a plant at Dowagiac, Mich., consisted of heavy items used in the production of aircraft engine parts. The largest single item weighed more than 25,000 lb.

The Clark Equipment Company supplied the moving contractor with three "Yardlift 150" machines which are capable of lifting 15,000 lb. each. These lift-trucks were able to handle all except the few very large items which were moved by two of the trucks operating as a team. In addition to unloading the heavy machinery the lift trucks also hoisted it to the second floor of the plant when necessary.

The entire job of unloading the 800 machines was accomplished in 27 working days by the three Yardlifts and a "Clarkat" towing tractor.

● Industrial Engine

The White Motor Company has announced a number of improvements in its line of "Mustang" engines for transport and industrial use.

Among the features of the new line are: better manifolding and improved combustion; special combustion chamber with dome-shaped piston heads for higher compression; high-lift intake valves with hydraulic valve lifters; twin-type exhaust manifolds with reduced backpressure; new type piston with hi-resist insert for ring groove; and sodium-cooled valves.

These features are said to give a high horsepower output for weight (6¾ lb./hp.), as well as improved performance in better mileage and lessened repairs.

● D.C. Arc Welder

Two lightweight, easily portable, direct-current arc welders have been brought out by Air Reduction Company, 60 E. 42 Street, Nev York 17, N. Y.

This welder, the "Model GA WASP", is available in 150 and 200 ampere sizes and is especially suited to d.-c. straight-polarity heliwelding. It features excellent commutation at all settings, self-excitation, and split-pole crossfield design. A wide unbroken range of welding current is provided by a continuous overlap from each current range to the next. The 150-amp. size has a range of 20 to 185 and the 200-amp. has a range of 30 to 250.

● Short Wheelbase Truck

A single passenger, short wheelbase truck, the "M310," designed to carry a large payload, has been introduced by the Cook Brothers Equipment Company, 1815 N. Broadway, Los Angeles 31, Calif.

The truck has a wheelbase of 174 in. The steel dump body is of lightweight high-tensile metal with a legal payload of 15 tons. A dual hydraulic hoist and a dual gear drive are standard, although single axle models will be available.

● Wet Cyclone

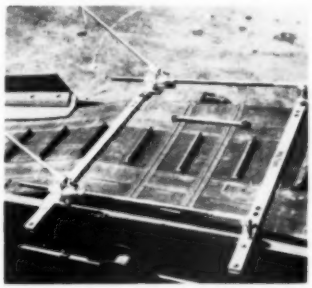
A wet cyclone for the recovery of fine sand from classifier overflow has been announced by the E. P. MacHovec & Company, Los Angeles 17, Calif.

The "Sandcone" is said to recover all available fine sand up to and including 200-mesh and can be set to produce the particular size needed. Capacities range from 50 to 1,500 g.p.m. The device uses a multiclone principle to permit lower pressures and lighter weight in many installations.

● Belt Stretcher

A belt stretcher for use in repairing or changing conveyor belts has been designed by the Farnco Conveyor Company. The "Far-Pul" belt stretcher grips the ends of the conveyor belt between two bolted plates. An adjustable bar is connected with a jack, and the ends are pulled together by simply pumping the jack on each side of the belt.

The Far-Pul belt stretcher is available in sizes to handle 8-in. to 36-in.



belts. One or two jacks are used, according to the size of the stretcher. The Far-Pul belt stretcher is being distributed by the G. N. Crawford Equipment Company, 6714 Kelly Street, Pittsburgh 8, Pa.

● Stockpile Loader

A stockpile windrow loader has been announced by Athey Products Corporation, Chicago 38, Ill.

The "Athey Force-Feed HiLoader" features a full-floating feeder that is suspended from two coil springs and a pivot, so that it floats over the contours of the windrow. An auger gather-feeder speeds up loading from stockpile and wide windrows. The spiral blades extend to the moldboards of the gather and feed a steady flow of material to the paddle blades.

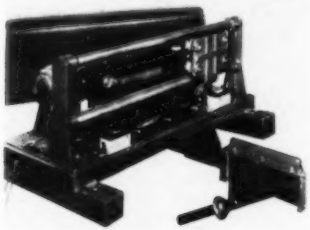
The conveyor belt is 30 in. wide and cleated to handle sand and other light materials as well as dirt, rock, etc. The discharge is swiveled and can be swung 45 deg. right or left by hydraulic controls.

Power is supplied by a Ford, 95-hp. 6-cylinder engine. Loading speeds are from .3 to 1.92 m.p.h., with a capacity up to 10 cu. yd. a minute. Traveling speed is up to 19 m.p.h.

● Automatic Sampler

An automatic sampler has been added to the line of equipment of the Denver Equipment Company, Denver, Colo.

The Denver automatic sampler has a ball-bearing carriage assembly actuated by a chain-and-sprocket drive powered by a gearmotor which is controlled by



a time switch. Limit switches control the length of travel of the cutter to either 16 or 21 in., depending on the size of the unit. It is able to operate with wet or dry samples.

The machine is a development of the GECO sampler produced by the Heginbotham Equipment Company, Salt Lake City. Sales and manufacturing rights have been acquired by Denver Equipment Company.

● Hardfacing Rods

Two new hardfacing welding rods have been brought out by the Rankin Manufacturing Company, Los Angeles 6, Calif. These two rods are suggested as replacements for rods containing tungsten in certain hardfacing applications. "Ranite C-X" is designed to give a wear- and abrasion-resistant surface on mill hammers and similar applications. It should be applied to preheated metal and the cooling rate slowed as much as possible. Ranite "No. 4" is applied in a similar manner as the C-X and gives comparable results. With tungsten in short supply and extremely expensive, it is suggested that these rods can be used in many applications to save critical material, as well as to reduce costs.

PRECO
Back-Rippers

Cut Labor Costs in Half!
Do Away With Other Equipment!

reports
Clay Products Company Engineer

"Our labor costs have been cut in half," declares John C. Owens, Civil Engineer of the Logan Clay Products Company, Logan, Ohio.

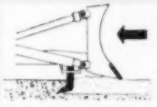
"Our Back-Rippers are mounted on a Caterpillar D8 tractor equipped with angling blade bulldozer and we use it to rip flint and other hard-packed formations. The flint ranges in thickness from 6 inches to 4 feet thick.

"Preco Back-Rippers have eliminated use of drills, powder, special trucks and shovels previously used for penetrating tough materials."

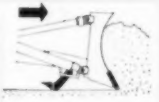
Preco Back-Rippers make every dozing operation easier – they break up the ground as the tractor backs up, permitting the blade to make a full load on each forward trip. They tear out rocks and roots and rip the ground for quicker dozing.

Large photo above shows John C. Owens, civil engineer (left), and Lawrence E. Hartman, operator, with the Logan Clay Products Co. Caterpillar D8 tractor used for ripping flint and other hard-packed formations.

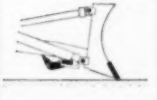
RIPPING
The four shanks, capped with lock-on teeth, rip the ground when tractor is backing up. Blade acts as depth gauge.



BULLDOZING
When tractor moves forward, teeth drag on top of ground. No controls are required.



RETRACTED
Each tooth can be independently pinned up out of the way. This permits making side cuts, trenches, curb locations.



PRECO
INCORPORATED
6300 E. SLAUSON AVE., LOS ANGELES 22
CABLE ADDRESS PRELA

See your "Caterpillar" dealer or write us for information.

● Torque-Arm Reducer

A double-reduction shaft-mounted speed reducer with capacity to 43 hp. and out-put speeds of 12 to 110 r.p.m.

has been announced by the Dodge Manufacturing Corporation, Mishawaka, Ind.

The No. 7 model has 59 percent greater horsepower capacity than the No. 6, although it embodies the same advantages. This model is shaft-mounted and anchored with a torque-arm which is adjusted by a turnbuckle to control belt tension. The overload release torque-arm may be used on this model, as shown in the illustration, as well as all the others in the line.

● ¾ Yd. Crawler Crane

A ¾-cu. yd. crawler crane has been announced by the American Hoist and Derrick Company, St. Paul 1, Minn.

The new machine has a choice of fronts—crane, shovel, dragline, or pull-shovel. The "375BC" has a machinery platform that is an integral rolled-steel-welded unit. The track pads are double walled, steel castings of a special abrasion-resisting formula, and have full-length pins. The boom is of special light alloy steel that eliminates dead weight and permits increased loads. A high-speed boom hoist with controlled lowering is standard equipment with the same maximum lowering and raising speeds. The shovel has an electric, push-button-operated dipper trip.

This machine follows the same basic design that is used by the company in building 80- and 100-ton capacity locomotive and revolving cranes.

personal mention

B. H. Voss

Promotion of B. H. Voss to the post of vice-president of the roofing granules division, Minnesota Mining & Manufacturing Company, has been announced by company officials. Mr. Voss will continue as sales manager for the division, with headquarters in Chicago. He has been sales manager since shortly after joining 3M in 1935.

In the early 20's Mr. Voss was one of the pioneers in the use of combinations of colored granules, rather than a solid color on asphalt roofing. This idea, coupled with subsequent improvements in color, enabled the asphalt roofing industry to capture the major portion of all roofing business in the United States.

FRANK B. THACHER, president of the Carbon Limestone Company, Lowellville, Ohio, has been named a director of the Interlake Iron Corporation, Cleveland, Ohio. For 18 years prior to 1940 he was assistant general manager of the Cleveland firm.

J. HARPER FULKERSON, president of the Cross Engineering Company, Carbondale, Pa., was recently named to the regional advisory council of the Small Defense Plants Administration for Pennsylvania and Delaware. This announcement was made by General Telford Taylor, SDPA administrator.

LEROY SCHARON, associate professor of geology at Washington University, has been named chairman of the mining, geology, and geophysics division of the American Institute of Mining and Metallurgical Engineers.

DWIGHT A. SYMMES has been elected president of the Glens Falls Portland Cement Company, Glens Falls, N. Y.

JOHN O. PRITCHARD has been appointed director of the new process evaluation divisions of the research department for the American Potash and Chemical Corporation, Los Angeles, Calif. Mr. Pritchard was formerly with the engineering department of the E. I. du Pont de Nemours Company, Wilmington, Del.

IRVING L. CLYMER, president of the Michigan Limestone and Chemical Company, Detroit, Mich., subsidiary of the U. S. Steel Corporation, has been elected a director of the Peerless Cement Corporation, Detroit.

GORDON H. CHAMBERS has been appointed president of the Foote Mineral Company, Philadelphia, Pa., succeeding H. C. Meyer, who became chairman of the board. Mr. Chambers joined the company in 1928, and had been executive vice-president since early in 1951.

JOHN B. STARK has been appointed chief chemist and inspector of the Hudson, N. Y., plant of Universal Atlas Cement Company, New York, N. Y. Mr. Stark succeeds Roy R. Drecher, who has retired after serving 39 years at the Hudson plant.

W. A. HAZELETT has been appointed vice-president and general manager of the Union Rock and Materials Company, Phoenix, Ariz., according to an announcement released by K. G. Bentson, company president. Mr. Hazelett, who had been sales manager of the firm for two years, will direct the work at the transit-mix concrete plant.

MELVIN H. BAKER, chairman of the board of the National Gypsum Company, Buffalo, N. Y., has been appointed head of the special corporations committee for the University of Buffalo's development program campaign to be held this spring.

JAMES EDWARD CHRISTIANSEN has been appointed traffic manager of the Marquette Cement Manufacturing Company, Chicago, according to an announcement by Clyde M. Tuttle, general traffic manager of Marquette and its subsidiaries. Mr Christiansen has been engaged in traffic work for 22 years. He served the last 11 years with the Universal Atlas Cement Company, New York.

MARVIN GREENWOOD, general sales manager of the Celotex Corporation, Chicago, was elected a vice-president of the corporation at the annual meeting of the board of directors in Chicago on February 19.

Mr. Greenwood, who was employed by the Celotex firm in 1925, has served successively as assistant to the sales manager, manager of the St. Louis sales

divisions, and assistant general sales manager. In 1939 he was appointed general sales manager, a position he will continue to hold in addition to serving as a vice-president.

EDGAR L. YOUNT, who retired on January 31 after 39 years of service with the Hannibal, Mo., plant of the Universal Atlas Cement Company, New York, was honored recently at a special meeting of all maintenance department employees.

WOODROW MILLER has been appointed properties adviser for the California Portland Cement Company, Los Angeles, Calif., according to an announcement by E. E. Duque, president. Mr. Miller will act in the same general capacity as his predecessor, EARL VAN LUVEN, who served as groves manager and properties supervisor for the firm for 37 years.

LAWRENCE M. MILLER has been appointed general manager of the Robert Powell Products, Sacramento, Calif.

C. WARREN BLACK, vice-president of the Arundel Corporation, Baltimore, Md., has been elected executive vice-president in charge of engineering and construction, according to an announcement by Richard A. Froehlinger, president of Arundel. Mr. Black has been associated with Arundel since its inception in 1919, and has represented the firm in a number of joint ventures for large construction projects.

D. J. C. Copps

D. J. Carroll Copps has been appointed general manager of Atlas Powder Company's explosives department. W. G. Frome, vice-president, continues as administrative head of the department.

William C. Lytle, manager of the explosive research division, and Max E. Colson, manager of the Atlas explosives plant near Tamaqua, Pa., were named assistants to Mr. Copps. Dr. William Taylor Jr., now assistant director of the company's explosives laboratory, becomes manager of explosives research.

Roland W. Oberholtzer, now Mr. Colson's assistant, succeeds the latter as Tamaqua plant manager.

J. R. Lewis

J. R. Lewis has been appointed general sales manager of Quaker Rubber Corporation, division of H. K. Porter Company, Inc., Philadelphia, Pa. Mr. Lewis, who has been with Quaker more than 11 years, has been Philadelphia district sales manager, assistant sales manager, and assistant general sales manager.

trade notes

Union Bag & Paper Corporation recently announced the appointment of Harry Recher as assistant to the vice-president in charge of bag and paper sales. Previously Mr. Recher had been a field representative for multiwall bag sales.

Officials of the Pangborn Corporation, Hagerstown, Md., have announced the appointment of Arthur J. Buckley as assistant sales manager. For the last 11 years, Mr. Buckley was associated with the Harnischfeger Corporation, Milwaukee, Wis.

T. O. Liebscher

T. O. Liebscher has been named president of Le Roi Company, Milwaukee, Wis. Mr. Liebscher started with the firm in 1940 as assistant secretary and assistant treasurer, then became secretary-treasurer. In 1946 he was elected to the board of directors and became executive vice-president in 1950.

G. J. Hamm was appointed secretary-treasurer, C. W. Decker assistant secretary, and J. R. Gavigan assistant treasurer at the same meeting of the board of directors.

Cummins diesels are being sold and serviced in eastern and central Iowa by Cummins Diesel Sales Corporation, with headquarters at University and Illinois Streets, Des Moines, Iowa. Territory for the new sales and service outlet will include Iowa, with the exception of Scott County.

James M. Gleason, former senior salesman at the Cummins Chicago dealership, has been named acting branch manager. L. H. Hanlon is in charge of the office and parts departments, and Joseph Boston heads the service department.

Dr. Fred Olsen has been appointed vice-president for Research and Development of Olin Industries, Inc. Dr. Olsen, who is a nationally recognized authority in the chemicals and explosives industries, is also an Olin director and has been the director of research and development.

Carl W. Tuohey has been appointed a representative of The Frank G. Hough Co., Libertyville, Ill., for sales district No. 2, comprising New York, New Jersey, Pennsylvania, Virginia, Delaware, West Virginia, and New England.

R. C. Heacock

Roy C. Heacock has been promoted to the position of chief engineer in charge of development and engineering for the Barber-Green Company, Aurora, Ill.

Mr. Heacock was formerly executive engineer of engineering development and was responsible for organizing the training school for service men in distributors organizations, and for many other special projects.

Alfred W. Crew has joined the Republic Rubber Division, Lee Rubber & Tire Corporation, Youngstown, Ohio, as a field engineer. Mr. Crew will headquarter in Charleston, W. Va., and will serve the major portion of West Virginia. Prior to his new position, Mr. Crew was associated with the Joy Manufacturing Company.

The Lakeshore Machinery & Supply Co., 400 West Laketon Avenue, Muskegon, Mich., has been appointed distributor for Lima shovels, cranes, and draglines in the western half of the lower peninsula of Michigan.

The opening of a new parts warehouse to serve Arizona, Utah, Nevada, and western New Mexico was announced by the Marion Power Shovel Company, Marion, Ohio. Offices and warehouse are located at 1017 North 22nd Avenue, Phoenix, Ariz. Manager is Hal A. Fisher. Ernest J. Riggs Jr., district Manager, will also maintain offices in the new warehouse.

Clarence M. Strong, director of purchases for Gar Wood Industries, Inc., Wayne, Mich., died unexpectedly in Detroit on February 23. He was 53 years of age.

Appointment of Louis J. Coppola as manager of government sales for the Mechanical Goods Division, United States Rubber Company, has been announced. Mr. Coppola succeeds George H. Pendleton, who is retiring after 46 years of service.

Carl A. Salmonsen has been appointed general manager of the General Electric Company's industry control department, with headquarters in Schenectady. The department will be a component of the Switchgear and Control Division, according to the announcement.

Charles D. Haxby and S. W. Galloway have been elected vice-presidents of The Rust Engineering Company. Before his promotion, Mr. Galloway had been manager of proposals and estimates, while Mr. Haxby was general construction superintendent.

As a result of the absorption of the Trackson Company of Milwaukee, Wis., by the Caterpillar Tractor Company of Peoria, Ill., a new setup has been announced for Trackson, which has become a wholly-owned Caterpillar subsidiary.

Louis B. Neumiller, Caterpillar president, will be chairman of a reconstituted

W. H. Stiemke

L. B. Neumiller

Trackson board of directors, which will include W. H. Stiemke, Trackson president, and the following Caterpillar officials—William Blackie, Ralph M. Monk, and J. R. Munro. Mr. Stiemke and L. E. Dauer, Trackson vice-president, will continue in their present administrative capacities.

Henry Gotfredson, secretary and treasurer of Trackson, wishes to retire, and will be succeeded by G. L. Scripps, who was formerly assistant treasurer of Caterpillar. William G. Thannert has been named factory manager of the Trackson Company.

John A. Hartzell has been promoted to the position of sales manager, Engineering and Construction Division of Koppers Company, Inc., Pittsburgh, Pa. Mr. Hartzell succeeds Ward L. Gable, who has retired but will remain with Koppers as a special sales consultant. The following appointments were also announced: C. W. Mohme, assistant to the production manager; C. K. Waibel, sales engineer; and C. E. Mielke and H. A. Grosick, contract engineers.

Two employees of the LeTourneau export department, R. L. Wollberg and Max Loertscher, have just completed a 42,000-mile world tour designed to give the latest information on the servicing of LeTourneau equipment. Two-week

• Left to right: R. L. Wollberg, Paul Fulford, and Max Loertscher discussing the 42,000-mile LeTourneau trek of Bob and Max.

"schools" held in each of the 13 countries visited were attended by service men of LeTourneau distributors. The sessions used slides, books, and demonstrations to present the material to the students in ten languages.

Sterling Electric Motors, Inc., Los Angeles, Calif., has recently opened a sales office in New Orleans with J. D. Trice as manager. The new office is located at 12 San Jose Ave., New Orleans 21, La.

Appointment of Robert A. Slenes as export sales manager has been announced by Diamond Iron Works, Inc., and the Mahr Manufacturing Company Division, Minneapolis, Minn.

The Cleaver-Brooks Company, Milwaukee, Wis., has announced the appointment of three new distributors for the sale of boiler equipment, and bituminous heating devices.

Wilson-Weesner Company, 310 S. 2nd Street, Nashville 6, Tenn., has been assigned a territory including counties in Tennessee and Kentucky. E. G. Giberson, 3719 Center Street, Des Moines, Iowa, will cover a territory that includes counties in Iowa, Missouri, and Illinois. V. N. Harwood Company, 250 Delaware Avenue, Buffalo 2, N. Y., will handle counties in western New York, and northwestern Pennsylvania.

Joseph P. Nugent has been elected vice-president and manager in charge of engineering sales of the United States Wallboard Machinery, New York, N. Y.

Henry J. Adams, a former sales engineer for Iowa Manufacturing Company, has purchased the Cunningham-Ortmayer Company, Milwaukee, Wis., distributors of construction and road-building equipment. The company is located at 1229 S. 41st Street, Milwaukee, and has a branch in Green Bay, Wis.

L. Wayne Nelson has been appointed district sales representative for Virginia, West Virginia, Kentucky, Tennessee, and North Carolina, for the Woven Wire Fabrics Division, John A. Roebling's Sons Company, Trenton, N. J.

E. D. Tull has been named to the position of vice-president for personnel and plant, Cummins Engine Company, Inc., Columbus, Ind. Mr. Tull will head a new division of the company which will be responsible for all personnel activities and plant construction and maintenance. Until his promotion, he was manager of manufacturing.

Atlas Powder Company officials, Wilmington, Del., have announced the election of William J. Wiley to the board of directors and to the office of financial vice-president.

Appointments have been announced for two assistant sales managers at the Barber-Greene Company, Aurora, Ill.

Harold W. Newton has been named

H. W. Newton

W. C. Gifford

assistant sales manager, Conveyor Division. He was formerly manager of engineered sales. William C. Gifford becomes assistant sales manager, machine sales. He was previously sales office manager.

J. Walter Snavely, manager conveyor section, Conveyor and Process Equipment Division, Chain Belt Company, Milwaukee, Wis., was a recent speaker before the Engineers Club of St. Louis, Mo.

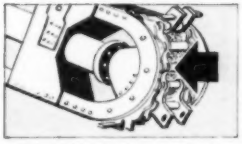
Mr. Snavely discussed engineering problems encountered in belt conveyor transportation in several large-scale installations.

Morris E. Leeds, founder and chairman of the board of Leeds & Northrup Co., Philadelphia, Pa., died on February 8 at Lake Wales, Fla. He was 82, and had been ill for several weeks.

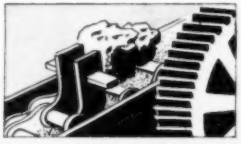
Gar Wood Industries, Inc., announces the appointment of Arthur F. Dries to the position of manager, sales promotion and advertising. Mr. Dries is in charge of the corporation's central advertising department, which handles all sales promotion and advertising functions for the Findlay, Wayne, St. Paul, Richmond, and National Lift divisions, as well as the Gar Wood branch offices in major cities throughout the country.

"Since installing an EAGLE 'Swintek' Dredging Ladder, we can now start up our plant and run all day"

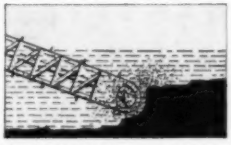
SO STATES MR. EBEN VAN DUSSELDORP, sand and gravel producer of Colfax, Iowa. The capacity of his dredge was increased four times. Boulders in the deposit can no longer work their way into suction line — the traveling chain screens the intake nozzle. "Shut-downs to clean line were so frequent we were discouraged" — then they installed a 10"-60' heavy duty Swintek. "Now we can dredge to lower depths and cut through impacted strata." Originally an 8" pump was used — now a 10" pump is being installed. Most users say, "We should have bought it sooner." Send for Catalog 745.



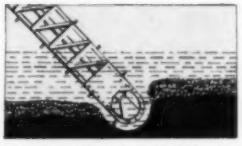
SCREENS NOZZLE. Keeps out boulders and debris. Ends shut-downs.



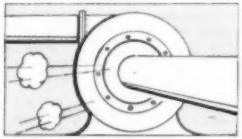
CARRIES BOULDERS AWAY FROM THE PUMPING ZONE. Cutter bars carry big rocks, stumps up ladder-dump behind pumping zone.



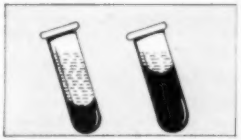
AGITATES DEPOSIT. Gets the material into circulation at intake. Production is increased.



CUTS THROUGH CLAY STRATA. Uncovers deposits which suction alone can't penetrate.



REDUCES PUMP ABUSE. Saves impellers and shells from pounding wear of boulders.

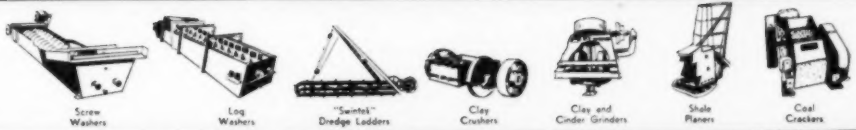


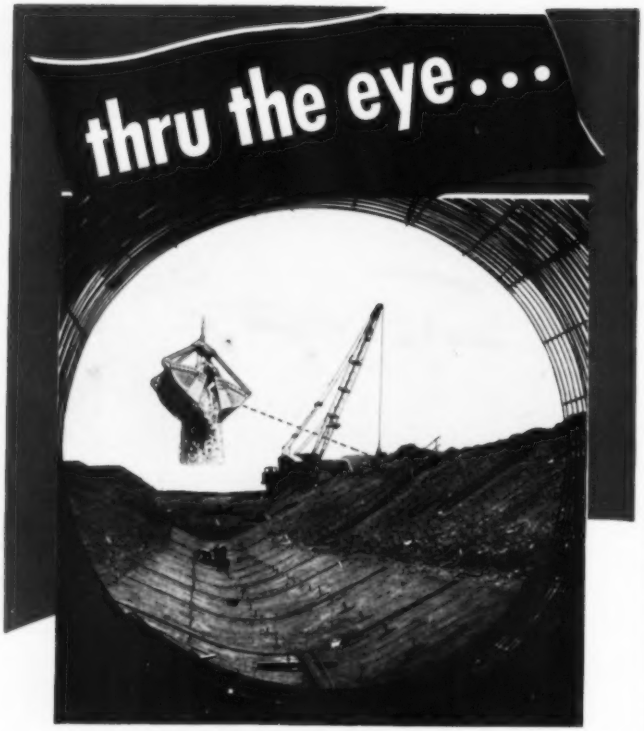
INCREASES THE RATIO OF SOLIDS TO WATER. You pump "pay dirt" — not worthless water.

UNDERCUTS BANKS. Hogs into banks eliminates "hydraulicking," blasting, labor.

MODELS FOR EVERY DEPOSIT CONDITION. Heavy duty, light duty, special light duty — various lengths.

EAGLE IRON WORKS 133 Holcomb Ave. Des Moines, Iowa





of a Culvert, a Contractor, or an Operator an OWEN BUCKET *"looks good"*

To a practical person looking out of a culvert such as this one, comes the suggestion of exceptionally great and economical digging ability or an Owen Bucket wouldn't have been selected.

To the contractor it recalls consistently good performance for years which has prompted him to reorder Owen Buckets year after year.

To the operator comes a reminder of how an Owen Bucket performs under varying difficult conditions, responding to his every demand and "stands up" with outstanding ability long after many buckets would have been relegated to the scrap heap.

John T. Weber

John T. Weber has been named manager, sales development, Cummins Engine Company, Inc., Columbus, Ind., succeeding Howard P. Sharp, who resigned recently.

Mr. Weber's duties will include the co-ordination of the advertising, technical literature, market research, sales training and publicity programs.

James A. McCrae has been appointed sales and service engineer for Baldwin-Lima-Hamilton Corporation, Lima-Hamilton Division, Lima, Ohio. Mr. McCrea's territory will include Colorado and Wyoming with the exception of the following counties in Wyoming: Sweetwater, Uinta, Lincoln, Sublette and Teton. He will have his headquarters at 1410 Eaton Street, Denver, Colo.

Phil Sprague Jr. has been appointed executive vice-president of The Hays Corporation, Michigan City, Ind. Mr. Sprague has been advertising manager for several years.

The appointment of Paul B. LeBoeuf to succeed Mr. Sprague as advertising manager was also announced. Mr. LeBoeuf comes to Hays from the A. O. Smith Corporation, where he was in charge of advertising and sales promotion.

The opening of a district office in Denver, Colo., and the appointment of James R. Hughes as district manager have been announced by Sterling Electric Motors, Inc., Los Angeles, Calif. The Denver office will service Colorado, New Mexico and parts of Wyoming, Nebraska, and Texas.

Russell G. Michell, an application engineer in Allis-Chalmers crushing, cement, and mining section since 1950, has been assigned to the Boston district office of the company's general machinery division as a sales representative.

Quaker Rubber Corporation, division of H. K. Porter Company, Inc., Philadelphia, Pa., has established a stock-carrying branch warehouse and sales office at 4006 Papin Street, St. Louis, Mo. The new branch will be operated under the supervision of J. H. Joyner, district sales manager.

Raymond S. Wood has been appointed general manager of Link-Belt Company's ball and roller bearing plant (Dodge plant) Indianapolis, Ind., to succeed C. V. Loughery, who has retired after 50 years' service.

Paul A. Schreffler has been added to the staff of sales engineers of the Traylor Engineering and Manufacturing Company, Allentown, Pa. He was a student engineer with the Allis-Chalmers Manufacturing Company.

William W. Kingman has joined the Melrose Park, Ill., branch of Illinois Contractors Machinery, Inc., and will direct the sales program in the Chicago trade area.

Mr. Kingman has been general sales manager for the Manufacturing Division of the Maxon Construction Company, Inc., of Dayton, Ohio.

W. Powell Jr.

Officials of the Bailey Meter Co., Cleveland, Ohio, have announced the appointment of W. Powell Jr. as manager of the Buffalo, N. Y., branch office. Mr. Powell is a veteran of 24 years with Bailey. He will be assisted by H. E. Bitler, J. R. Brennan, Roy D. Kelley, John I. Taylor, and N. D. Jones. Mr. Powell succeeds H. T. Sawyer, who has resigned to accept a position with RCA.

Koppers Company, Inc., Pittsburgh, Pa., will embark on an enlarged and more unified program of research, with a major portion of such work centered at Verona, Pa., where new laboratories are now nearing completion, General Brehon Somervell, president, announced recently.

The formation of a new South Central Sales Division of Hewitt-Robins Incorporated, was announced recently. L. C. Holloman has been appointed assistant division manager in charge of the newly-created division, which covers Texas, west Tennessee, Oklahoma, Arkansas, Louisiana, Mississippi and Alabama, with headquarters at Houston, Tex.

Union Bag & Paper Corporation, New York, N. Y., has announced the appointment of Alexander Calder Jr. as executive vice-president and general manager. Previously Mr. Calder had been vice-president and assistant to the president. H. S. Daniels, who will shortly complete his service as consultant to the OPS will take over the direction of all company sales as executive vice-president and general sales manager.

James L. Knipe has resigned as vice-president and general sales manager, but will continue as a director.

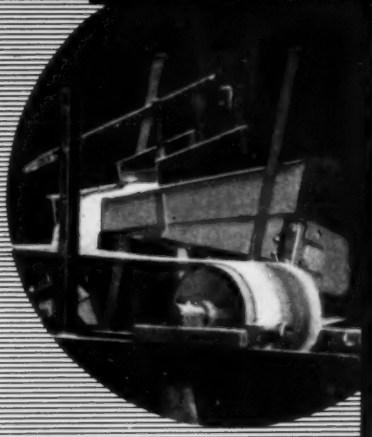
Appointment of A. H. Knief as regional manager of the Davey Compressor Company with headquarters in Milwaukee, Wis., has been announced. Mr. Knief was formerly a sales representative with the Wisconsin Motor Corp. In his new position he will be in charge of sales in Wisconsin, upper Michigan, Minnesota, Iowa, Illinois, and Missouri.

At the annual meetings of the stockholders and the board of directors of the Bemis Bro. Bag Co., St. Louis, Mo., C. W. Loomis, vice-president and director of personnel, was elected to the board, and F. V. Deaderick, eastern director of sales, was named a vice-president.

SYNTRON

VIBRATORY FEEDERS

CAN IMPROVE
YOUR MATERIAL HANDLING



FEEDING:

Aggregate onto a belt conveyor . . .

Rock from dump truck to crusher . . .

Frit to a Bag Filler . . .

Pit Run Gravel in Primary System of a Rock Plant . . .

Clay to Pan Mill Refractory . . .

Lime from draw point of Kiln . . .

Syntron Vibratory Feeders provide an efficient economical method of conveying rock products and the simplest and easiest means of controlling rate of flow.

They offer a variety of feed rates—with finger-tip dial control—from pounds to hundreds of tons per hour.

Available in a number of models and trough styles, they are readily adaptable to many processing systems—and can increase the efficiency of your crushers, grinders, screens, mixers, etc.

To Cut Your Material Handling Costs
Mail Coupon for Complete Description of Syntron Feeders

SYNTRON
MATERIAL HANDLING EQUIPMENT

Please send my FREE copy of the
SYNTRON VIBRATORY FEEDER
Illustrated Catalog Literature

NAME ..... TITLE .....

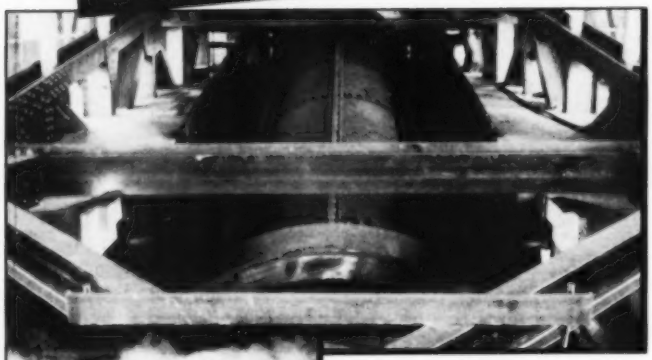
COMPANY .....

ADDRESS .....

CITY ..... ZONE ... STATE .....

SYNTRON COMPANY
385 Carson Avenue Homer City, Penna.

For long wear and high production use YUBA SCREENS and CONVEYORS



YUBA makes Abrasion Resisting Steel Screens, flat or revolving, for all screening purposes—separating, scrubbing, sizing. Holes are taper drilled to prevent clogging, can be small and closely spaced for screening sands bearing monazite and other rare earths. All thicknesses from ¼" up; other dimensions as big as your needs—screen shown is 50' long, 9' diameter, weighs about 65 tons. Competitive prices—ask for quotations.

YUBA-built conveyor pictured can handle 1440 tons per hour, is part of nearly mile-long conveyor system carrying crushed rock (minus 8") from pit to plant to stockpile. Yuba has built hundreds of heavy-duty conveyors for rock, gravel and sand since 1909. Put this experience to work on your conveying problems NOW.

SCREENS,
CONVEYORS,
DREDGES,

built-to-order machinery—Yuba will gladly furnish estimates. Wire, write or call—no obligation, of course.

YUBA MANUFACTURING CO.

Room 718, 351 California St., San Francisco 4, California, U. S. A.

AGENTS { SIME, DARBY & CO., LTD. · SINGAPORE, KUALA LUMPUR, PENANG.
SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.

CABLES: YUBAMAN, SAN FRANCISCO · SHAWDARBCO, LONDON

48

Harry Cain

Appointment of Henry Cain as district sales representative for Nebraska, Kansas, Missouri, and southern Illinois was announced by R. G. LeTourneau, Inc., Peoria, Ill. Mr. Cain for the last five years has been LeTourneau's chief Washington representative.

Named acting chief Washington representative is David W. Flint, who has been with the Washington office for the last few months. Jack McCann, former member of the Advertising Department, has been appointed assistant Washington representative.

William Barry has been transferred to the Domestic Sales Department from the Government Sales Department. Darrell Abernathy succeeds Mr. Barry as special representative for the Government Sales Dept. The parts coordinating position formerly held by Mr. Abernathy is now filled by John Tuntas.

Hewitt-Robins, Inc., will move its headquarters offices from 370 Lexington Avenue, New York, to Stamford, Conn., about April 1.

The corporation will lease the former Crofoot property in the Glenbrook section of Stamford. Alterations are now being made to adapt it to headquarters office use.

The retirement of W. L. Patrick, Chase Bag Company sales representative for the last 33 years, has been announced from the Chase General Sales Office in Chicago. His successor will be R. F. Rhoden, a Chase representative since 1947, who has worked with Mr. Patrick for the last year. Mr. Rhoden's headquarters will remain in Boise, Idaho.

Worthington Pump and Machinery Corporation, Harrison, N. J., has elected C. K. Hood, formerly manager of the corporation's New York district sales office, to a vice-presidency. He will be responsible for the direction of the activities of the public works, steam power, de-aerating, water treating, and steam turbine divisions.

W. J. Van Vleck, present manager of the Atlanta district sales office, will succeed Mr. Hood as manager of the New York district sales office. C. W. Kramer, resident general line salesman in Birmingham, Ala., will succeed Mr. Van Vleck as manager of the Atlanta office. I. W. Leggett, general line salesman at Charlotte, N. C., has been appointed manager of the Charlotte branch office.

George J. Wellner, formerly with the First National Bank of Chicago, has been elected assistant treasurer of Caterpillar Tractor Co., Peoria, Ill. Mr. Wellner succeeds George L. Scripps, who was recently named secretary-treasurer of Trackson Company, Milwaukee, Wis.

R. H. Snyder

Raymond H. Snyder, former president and treasurer, Snyder Aircraft Division, Air Associates, Chicago, has purchased certain assets of the Chicago operation of Cummins Diesel Sales Corporation. Mr. Snyder will operate the Chicago facilities as an independently owned Cummins dealership under the new company name of Cummins Illinois Engine Sales, Inc.

Headquarters will remain at 1700 S. Indiana Avenue, Chicago. The territory assigned the new company includes the 22 counties of northern Illinois; Scott County, Ia.; and Lake, Porter, and La Porte counties in northern Indiana.

The operations at Milwaukee, Wis., and Peoria, Ill., formerly with headquarters at Chicago, now will operate as individual dealerships of Cummins Diesel Sales Corporation. E. E. Sandtner is the manager at Peoria, and R. R. MacDonald is in charge at Milwaukee.

Central and eastern portions of Iowa, with the exception of Scott County, Iowa, have been transferred to the Cummins Diesel Sales Corporation's headquarters at Omaha, Neb. W. D. Blizzard is manager of the Omaha dealership.

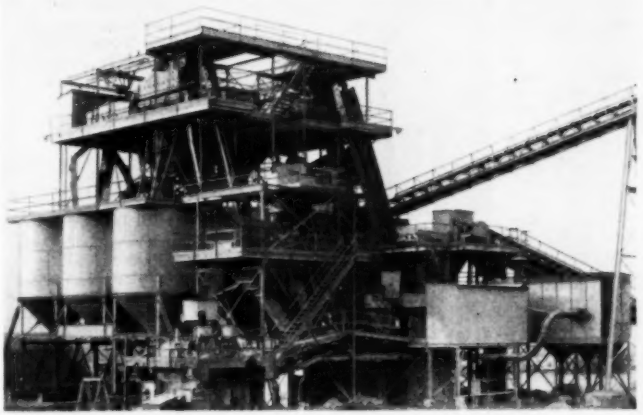
J. Delano Hitch, formerly vice-president in charge of sales of The Dorr Company, Stamford, Conn., has been promoted to the position of executive vice-president. T. Bartow Ford, until recently manager of international sales,

J. D. Hitch

T. B. Ford

has succeeded Mr. Hitch as vice-president in charge of sales, and has been elected a director of the company. John H. E. Fedeler, assistant manager of international sales, has succeeded Mr. Ford as manager.

V. C. Genn, general sales manager, Detroit Diesel Engine Division, General Motors Corporation, in a recent announcement stated that the Detroit Division had produced more diesel engines in 1951 than in any previous non-war year. He said that over 50,000,000 diesel horsepower had been produced since General Motors introduced its smaller two-cycle engine in 1938. Greater portability of the smaller engine was cited as a factor in its widespread use.



how dust free can an aggregate plant be?

Complete dust control — virtually 100% — is possible with the Dustube cloth tube type Collector. For example, the Duarte, California rock crushing plant of the Blue Diamond Corp. is considered as dust-free an operation as can be found anywhere in the aggregate-producing industry. All dust creating operations — gyratory and reducing crushers, discharge and feed ends of belt conveyors and bucket elevators — are ventilated by a Dustube Collector.
Highly efficient, the Dustube is also simple in design to keep operation and maintenance costs to a minimum. It has but few working parts. Shaking can be automatically controlled and the collected material reused or disposed of in the dry state without thickening, filtering or drying.

DUSTUBE EFFICIENCY proved for applications like these

- √ Ready Mix Concrete
- √ Sand and Rock Drying
- √ Cement Manufacture
- √ Rock Crushing
- √ Cement Block Producing

send for this important new catalog

Containing 40 pages of practical information and engineering data on dust and fume control.

Write for Catalog No. 72B.

American WHEELABRATOR & EQUIPMENT CORP. dustube® COLLECTORS

430 S. Byrkit St., Mishawaka, Ind.

M. J. Weber

The Frank G. Hough Co., Libertyville, Ill., has announced the appointment of Milton J. Weber as vice-president, procurement.

Mr. Weber is a graduate of DePauw University, Greencastle, Ind., and has been associated with the Santa Fe Railroad, the John Deere Distributor Organization, and the J. D. Adams Co. He came to The Frank G. Hough Co. from the latter concern.

H. M. Sossaman was recently elected vice-president in charge of commercial development, Quaker Rubber Corporation, Division of H. K. Porter Company, Inc., Philadelphia, Pa.

Mr. Sossaman, who has been with Quaker for more than 23 years, was promoted to assistant general sales manager in 1943, and general sales manager in 1950.

J. R. Lewis succeeds Mr. Sossaman as general sales manager. Mr. Lewis, who has been with Quaker since 1940, has held positions as district sales manager and assistant general sales manager.

The De Laval Steam Turbine Company, Trenton, N. J., has announced the formation of a subsidiary corporation, the De Laval Turbine Pacific Company. Headquarters for the company will be in a new building at Main and Folsom Streets, San Francisco, Calif., which was erected by De Laval Steam Turbine Company in 1951.

The company officers are: G. W. Smith Jr., chairman; J. P. Stewart, president; and C. F. Reeves, vice-president and general manager.

Mr. Reeves will be in direct charge of operations of the company, continuing the duties he has held for many years as West Coast manager of De Laval Steam Turbine Company.

Branch sales offices are located in Los Angeles, Calif., under H. H. Reynolds, district manager, and Seattle, Wash., under J. A. Greenland, district manager.

Eugene P. Alexander, Chase Bag Company sales representative, has been transferred from the company's Cincinnati territory to its Detroit sales office. Mr. Alexander's successor in Cincinnati will be D. L. Herrick, formerly of the Chase Milwaukee branch.

The appointment of general managers of the five newly-created operating divisions of Olin Industries, Inc., was announced recently. The general managers of the new divisions will have full responsibility for their operations, including production, sales, research and development, and quality control.

N. A. Hamilton is the general manager of the Explosives Division, with headquarters at East Alton, Ill., and with plants in various parts of the country.

M. W. Acker, Olin director and vice-president, was named general manager of the Metals Division, with headquarters at East Alton and plants at East Alton and New Haven, Conn. M. F. Meissner is assistant general manager.

W. S. Allen is the new general manager of the Electrical Division. His headquarters are at New Haven, and plants at New Haven and Covington, Tenn., are under his supervision.

George L. Dawson, who has been regional manager of the Olin plants at New Haven, has been appointed staff assistant to the executive vice-president, for whom he will execute special assignments.

K. H. Cree

Western Precipitation Corporation has announced the opening of new offices in Atlanta, Ga., in order to render maximum service to the fast-growing industrial South.

The Atlanta office will be under the direction of Kenneth H. Cree, a graduate mechanical engineer, who has had more than 16 years experience in the United States, Europe, and Latin America handling a wide range of applications in the recovery of various types of suspensions—both wet and dry—by electrical precipitation.

L. G. Carson

L. J. Carson, former general manager of the Link-Belt Company Minneapolis plant, has resigned from his position as price executive, Machinery Branch, Industrial Materials and Manufactured Goods Division of O.P.S., Washington, D. C., and has been named general manager of Link-Belt's new Colmar, Pa., operation. This plant is now under construction and is scheduled to be opened during the last quarter of 1952.

Mr. Carson was given a leave of absence to accept the position with the O.P.S. in March, 1951.

William H. McAllister has been appointed district manager for Gar Wood Industries, Findlay Division, for Texas Oklahoma and New Mexico. He has been with Gar Wood since 1949, and was district manager in the Memphis territory.

Guilford E. Koehler has just been appointed district manager at Memphis for Gar Wood Industries, Inc., Findlay Division, succeeding Mr. McAllister. Mr. Koehler worked as a Gar Wood serviceman for more than nine years and has been a district manager for the Findlay Division.

Appointment of two new district sales managers and three new factory representatives was announced recently by the New York Belting and Packing Co., Passaic, N. J.

Carl G. Link Jr., formerly Chicago factory representative, was named northern district sales manager covering Iowa, Indiana, Illinois, and parts of Pennsylvania, Ohio, Wisconsin, and New York. He will make his headquarters in Chicago. Frank E. Cavanaugh has been added to Mr. Link's staff as a factory representative in the northeastern district.

William I. Butler, formerly factory representative in Memphis, Tenn., was named southeastern district sales manager covering all of the southeastern section of the country from the Mississippi to the Atlantic Coast. He will make his headquarters in Memphis.

Joseph Van Schaik, formerly with the home office in Passaic, has been named factory representative in the Rocky Mountain states, with headquarters in Denver, Colo. Wayne E. Law, formerly in the Houston office of the company, has been named oil field factory representative in the Rocky Mountain states, with headquarters in Denver, Colo.

H. H. Miller

Herman H. Miller, one of the country's leading compressor authorities, retired after serving 50 years with Worthington Pump & Machinery Corporation, Harrison, N. J.

In 1901 as an application engineer he joined the Lidlaw-Dunn-Gordon Company, Cincinnati, O., a subsidiary of International Steam Pump Co., which later became the Worthington Pump and Machinery Corporation.

Ten years later he became manager of the Air Compressor Department at Worthington's New York office and in 1915 became sales manager of Worthington's Cincinnati plant. In 1932 he was made manager of the Compressor Division of Worthington when the company's Cincinnati plant was consolidated with the Buffalo plant.

Pioneer Engineering Works, 1515 Central Avenue, Minneapolis, Minn., subsidiary of Poor & Company, Chicago, Ill., recently purchased from Jaeger Machine Company, Columbus, Ohio, its Model BP-5 bituminous paver. Through this acquisition, Pioneer secured the exclusive right to manufacture this paver under the various patents. The new equipment will be built in the Minneapolis plant and will be distributed through Pioneer dealers.

A. Rasmussen has been promoted to vice-president and plant manager, and Robert E. Kroc was promoted to sales manager, succeeding Mr. Rasmussen, by the Fahralloy Company, Harvey, Ill., according to recent press notice. These promotions were announced on the company's 20th anniversary.

The assets and business of Climax Engine and Pump Company, Clinton, Iowa, has been acquired by Eversharp, Inc. No changes in operation or personnel will be made, and the company will operate as an independent division, according to a recent press announcement.

The Hercules Powder Company, Wilmington, Del., has announced the retirement of two explosives experts. William C. Hunt, assistant general manager of the explosives department, ends a 43-year association with the explosives industry. Mr. Hunt worked as research chemist, chemical engineer, finished products inspector, plant superintendent, director of explosives operations, and assistant general manager of the explosives department.

Cornell H. Cordie, manager of explosives development, has been associated with the industry since 1906. He worked in the chemical laboratories of explosives companies, was a member of the Mine Accident Division of the U. S. Geological Survey, predecessor of the present U. S. Bureau of Mines, and was general superintendent of the Aetna Explosives Company, which became part of Hercules Powder Company in 1921.

George C. Wilder was elected vice-president and assistant general manager of the Macwhyte Company, Kenosha, Wis., at a recent meeting of the board of directors. He has been a traveling representative for the company and has been assistant to the general manager for the last three years.

The Frank G. Hough Company, Libertyville, Ill., is publishing *Industrial Handling*, a magazine to encourage better material handling in all types of industrial plants, at transportation terminals, and in the construction field. The magazine is filled with stories of bulk materials handling at plants. Illustrations show the methods used in meeting the various problems.

A recent issue is devoted to stories of flux stone stockpiling and similar materials handling methods at a manufacturing plant, a phosphate plant, and two other operations.

The transfer of A. B. Chavez from Denver to El Paso to head the Denver Equipment Company office in that city was announced recently.

Mr. Chavez will continue the field work in the Texas, New Mexico, and northern Mexico area started in 1949 by R. E. Lintner. Mr. Lintner returned to Denver, where he is on special assignment work in sales engineering.

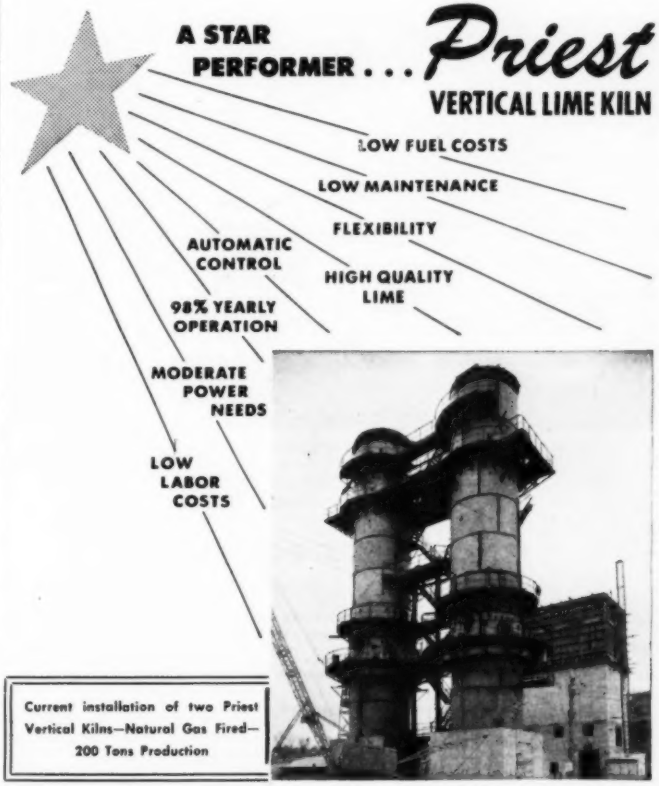
David Larkin, former executive vice-president, was elected to the board of directors of the Broderick & Bascom Rope Company, St. Louis, Mo.

At the meeting of the new board for the election of officers, A. A. Grosse, who has been assistant treasurer, was elected to the additional office of secretary, a position formerly held by Joseph H. Bascom, now executive vice-president and treasurer.

Jack G. Copeland Jr. has been named works manager of Hercules Powder Company plant at Carthage, Mo., it was announced recently. He succeeds John C. Foster, who will manage the Hercules-operated Radford Arsenal at Radford, Va.

Karl H. Dressel has been promoted to field engineer for the Republic Rubber Division, Lee Rubber & Tire Corporation, Youngstown, O. Mr. Dressel will headquarter in St. Louis, Mo., and will be responsible for the state of Missouri.

Twelve acres of land located at Knowland Road and 35th Street, Independence, Mo., were purchased recently by the Tractor Division of Allis-Chalmers Manufacturing Company. The company reports plans for immediate construction of a new and modern factory branch to serve agricultural and industrial dealers in eastern Kansas and western Missouri. The facilities will replace the Kansas City branch, which is located at 1224 West 12th Street.


A STAR PERFORMER . . . Priest VERTICAL LIME KILN
LOW FUEL COSTS
LOW MAINTENANCE
FLEXIBILITY
AUTOMATIC CONTROL
HIGH QUALITY LIME
98% YEARLY OPERATION
MODERATE POWER NEEDS
LOW LABOR COSTS
Current installation of two Priest Vertical Kilns—Natural Gas Fired—200 Tons Production

The British-designed Priest Vertical Lime Kiln has a long and highly successful record in many European installations. It is now arousing wide interest among experienced American producers.

This shaft type kiln is compact, automatically operated, and fully mechanized. An outstanding feature is the patented water-cooled burner, which assures even fuel distribution, large output, and a product meeting all specifications.

Write for Complete Information

HOLBECK CORPORATION LTD. ENGINEERS AND CONTRACTORS TORONTO • ONTARIO • CANADA

Baldwin-Lima-Hamilton Corporation, Lima-Hamilton Division, Lima, Ohio, recently announced the appointment of R. W. Head as district manager of the Southwest territory, with headquarters at 1805 North Industrial Blvd., Dallas, Tex. His territory includes New Mexico, Oklahoma and Texas. Mr. Head succeeds R. A. Otterness, who has accepted the post of sales manager for Contractors Equipment and Supply Co., Albuquerque, N. M.

Officials of the American Wheelabrator & Equipment Corporation, Mishawaka, Ind., have announced the promotion of Andrew B. Stevens to the position of assistant factory manager. He was formerly supervisor of production control and stores.

legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

A few weeks ago the writer interviewed many owners and officials of nonmetallic products sales agencies and manufacturing plants in Eastern states. This article comprises legal questions asked by these persons. After consuming considerable time in locating relevant cases, my answers are verified by cited leading higher court decisions.

No Implied Guarantee

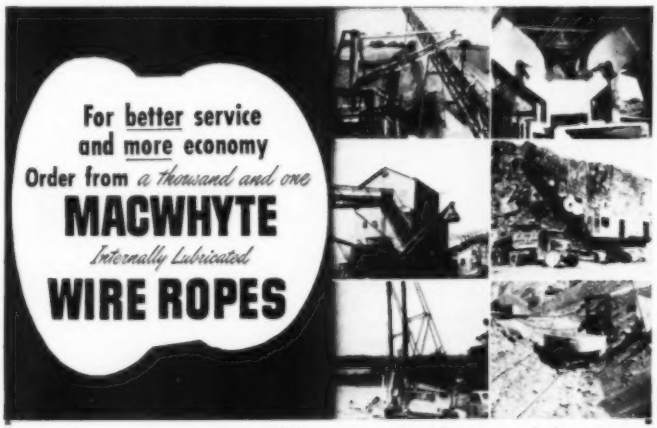
An official of a quarry corporation asked this question: "We sold crushed rock to a contractor for use on a highway. In fact, we signed a contract to supply this rock. The highway department refused to allow the contractor to use the delivered rock because the rock did not meet its specifications. Now the contractor refuses to pay us. His lawyer claims we are liable on an implied guarantee. Can we compel him to pay us for the delivered rock?"

The answer is yes, unless the testimony shows that the contractor gave you authority to select the grade of rock suitable for the highway project. Under these latter circumstances you are liable on an implied guarantee that the grade of rock you supplied complied with the highway department's specifications.

For illustration, in *Company v. S.* 72 Pac. (2d) 354, the owner of a gravel pit filed suit against a contractor to recover $1,600, the purchase price of gravel bought by the latter under a contract. The contractor admitted the contract, but claimed it was rendered void because there was an implied warranty that the gravel would meet the highway department specifications, and that this test failed. In other words, the contractor contended that the seller impliedly warranted the gravel to be of sufficient quality to meet the specifications and requirements of the highway department, because he knew the purpose for which the H. C. Company purchased it. However, since the seller did not offer his judgment or advice to the contractor as to the required quality of the rock, the lower court refused to hold the seller liable on an implied guarantee and held the contractor liable for payment of the gravel. The higher court upheld the verdict of the lower court and said:

"The record reflects that the defendant (contractor) made the contract and that the plaintiff (seller) did not offer his judgment, but allowed the defendant to act as he deemed best. In fact, the defendant (contractor) did not make a contract until after tests had been made. The lower court was warranted in its holding there being no implied warranty by the seller here such as to void the contract".

The courts may assume the existence of an "implied" contract. Its orgin and use are to promote high standards in business and discourage dishonest dealings. An implied guarantee rests upon the prin-


For better service
and more economy
Order from a thousand and one
MACWHYTE
Internally Lubricated
WIRE ROPES
It will pay you to get Macwhyte Wire Rope engineered and job-proved for your equipment. Over the years, ropes for all types of quarry equipment have been developed by Macwhyte. Recommendations are promptly available from Macwhyte distributors or Macwhyte Company. You get the correct wire rope for your equipment when you buy Macwhyte.
MACWHYTE COMPANY
2987 Fourteenth Avenue, Kenosha, Wis. Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Catalog available on request.
Mill depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles. Distributors throughout U.S.A.

COMPLETE CRUSHING PLANTS
designed and equipped by FARREL-BACON
FARREL-BACON
Farrel-Bacon provides a complete engineering service, including design of plant and supplying all equipment from primary crusher to bin gate. Jaw-type crushers are available in sizes from 60" x 48" to 10" x 7" Write for complete information.
FARREL-BACON
ANSONIA, CONNECTICUT
BA-5

ciple that "honesty *is* the best policy", and it contemplates business transactions in which both parties may honestly profit.

The law presumes every person, firm, and corporation to be honest and trustworthy until proven to the contrary. Frequently the character of dealings is such that one party to a contract is compelled to rely upon the honesty of the other. Under these circumstances the courts imply a warranty on the part of the former that he will perform the expressed obligations, as well as those implied obligations which should "by right" be fulfilled.

Must Read Contract

A reader asked this question: "Is a party who signed a contract without reading it liable to fulfill the terms and obligations?"

It is well established law that a contract is *not* rescindable, although the complaining party was mistaken with respect to his obligations, or failed to read the contract.

An illustration of this phase of the law is found in the leading case of *Dixon v. Morgan*, 285 S. W. 558. In this case it was shown that a purchaser signed a purchase contract for gravel without taking the necessary caution to read it carefully. In subsequent litigation the court explained that the general principle of the law, which runs through nearly all of the cases of this character, is that a contract made through the mistake of one party will be cancelled *only* when it can be done without doing injustice to the other person.

In another case (298 S. W. 918) it was shown that a purchaser negligently signed a contract of sale without reading it. Later he refused to accept the products on the contention that he had discovered that the contract contained certain stipulations that were not called to his attention by the seller when the contract was signed. In the resulting litigation the buyer contended that he was mistaken of his obligations and that he was deceived because the seller failed to explain the details of the obligations. Notwithstanding these contentions the court held the buyer required to fulfill the contract, and said:

"In the absence of fraud, misrepresentation, or concealment, the rule is well established that one who can read and who signs a contract without reading it, and under circumstances which do not preclude an exercise of due diligence upon his part to ascertain the contents of the contract, will not be heard afterward to say that he did not read it and did not understand its provisions."

City Officials Exceed Authority

A reader asked this question: "Can a city avoid paying for materials its officials purchased and used for benefit of the city?"

Whoever contracts with a municipality does so with the implied notice of the limitations on legal powers of its agents and officials. In other words, all sellers of rock products are presumed to know the law. Therefore, those who contract with a municipality or furnish it materials do so *at the risk* that the municipal officials who make the contract, or pass an ordinance, have proper legal authority.

For illustration, in the leading case of *Johnson-Olmsted Company v. City*, 1 P. (2d) 928, it was shown that city officials entered into a contract for the purchase of nonmetallic materials without taking bids, notwithstanding the city charter provided that all contracts for local improvements must be let to the lowest reliable and responsible bidder. In holding this contract void, the court said:

"The contract is bad. . . . because in any event competitive bids for such service must be had".

For comparison see *Willis*, 28 S. W. (2d) 119. Here it was shown that a state law provides that city councils have authority to purchase certain kinds of supplies and materials for municipalities.

A seller visited city officials for the purpose of taking contract of sale for his products. The council was not in session, and no meeting of it was called. However, the mayor of the city instructed two members of the council to sign the contract for the city, and a written contract was signed in accordance with these instructions. Since the mayor, who orally directed the two councilmen to make the contract, had no authority to do so, the city later refused to pay for the products.

In subsequent litigation is was argued that the city was liable for payment, first, because the city council afterward attempted to ratify the contract, and, second, the city had used the materials for the benefit of its citizens. Never-

Medium sized Sauerman Slackline Cableway, installed in 1928, has dug and moved many hundred thousand cubic yards of gravel from this pit to the screening plant with minimum expense for labor, power and repairs. Still good as new after 23 years' service, the machine continues to maintain its rated capacity.

Sauerman
slackline cableway excavators

The Sauerman Slackline Cableway reaches far out — across a deep pit, water, sludge or bog — to pick up a load at the finger-tip command of one man sitting in a comfortable operating station overlooking the site of the work. It avoids the risk of sending men or machines onto the surface of soft areas.

This efficient slackline cableway does the work of two or more machines —quickly digs, conveys, elevates and dumps in a non-stop cycle. The thoroughly proved dumping arrangement has never been successfully duplicated by any other device. Digging speed is low, to provide extra power. Then the cableway hoist shifts into high speed for conveying .

Maintenance costs are exceptionally low since the most expendable parts of the Sauerman Slackline Cableway never come in contact with the material handled. Also, there is only one machine to service, which further reduces operating costs. Gasoline, electric or Diesel power consumption is surprisingly low. Installation is simple.

So if you want to move more yardage per hour on deep excavation, at less cost per yard — it will pay you to investigate all the many exclusive advantages of Sauerman Slackline Cableway equipment.

Sauerman Slackline bucket in picture is dumping 5-ton load of material onto an elevated grid. Bucket makes 38 round trips an hour digging from storage basin and delivering to grid.

Write today for new, illustrated catalog C.

Rope Haulage Equipment Specialists Since 1909

SAUERMAN BROS., Inc.

534 S. CLINTON STREET CHICAGO 7, ILLINOIS

NON-FLUID OIL

TRADE MARK REGISTERED

Stays In Shake-Out Bearings

Super-adhesive F-#925 and S-#58-M grades of NON-FLUID OIL are designed to withstand violent shocks and terrific vibration of shake-outs and screens. NON-FLUID OIL, through its exclusive adhesive properties, stays in ball and roller bearings and protects against friction long after ordinary greases have been "knocked out" or become "dead".

Send for testing samples of F-#925 and S-#58-M grades of NON-FLUID OIL and prove to yourself that they will stay in shake-outs and will remain "alive" longer, outlasting ordinary greases 3 to 5 times.

NEW YORK & NEW JERSEY LUBRICANT COMPANY

292 Madison Avenue, New York 17, N. Y. — Plant: Newark, N. J.

Represented in principal industrial centers.

Why not also write for new Bulletin No. 550 and free testing sample of "NR" grade NON-FLUID OIL especially manufactured for all pneumatic tools.

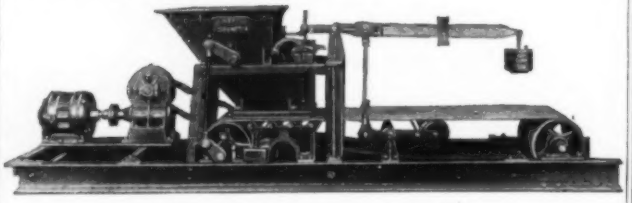
NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture.

"ACE-HIGH" WITH PRODUCERS

for scaling raw and finished materials

SCHAFFER... POIDOMETERS

OVER 1200 now serving Industry



Tested-and-proven SCHAFFER Poidometers occupy "key positions" in many industries throughout the world.

Everywhere you will find these fast, accurate, automatic machines doing a superior job of weighing, blending, feeding, mixing, recording and proportioning.

Designed and built by experienced engineers, Poidometers provide continuous, high-economy service, and insure maximum production.

Available with remote controls for showing and changing feed rate, and total weight recorders.

Write for Catalog No. 5

SCHAFFER POIDOMETER CO.

2828 Smallman Ave., Pittsburgh 22, Pa.

theless, the court held the city *not* liable for payment, and said:

"The contract was void when made because executed on the part of the city without authority, and, being, void, could not be ratified."

And again, *see Openchain v. Mercer*, 17 S. W. (2d) 376. A state law requires municipalities to enact ordinances to authorize the making of contracts. The board of trustees of a municipality, in violation to this state law, signed a contract for the purchase of certain rock products, but failed to pass an ordinance in accordance with the provisions of the above-mentioned state law. The court promply held the city not bound to pay for the materials, stating the following important law:

"We must, therefore, hold that the only method by which the board of trustees could bind this defendant (city). . . . was by ordinance authorizing the contract."

Property Owner Deceives Contractor

An official of a construction company asked this question: "Can an excavation contractor sue and compel a property owner to pay more than the contract price for a job if the contractor is compelled to do more excavation work than he expected to do on account of the property owner concealing knowledge of hidden obstacles?"

According to a late higher court decision, the answer is yes.

For example, in the late case of *Highland Company v. Heyburn Company*, 35 S. W. (2d) 521, it was disclosed that a property owner contracted to pay a specified amount to a contractor for excavating soil and gravel. After the work was begun, an old abandoned concrete swimming pool was discovered and its removal necessitated a considerable amount of extra work and expense. The contractor sued the property owner to recover extra payment.

During the trial it was proven that the property owner had knowledge that the swimming pool was embedded in the gravel. Therefore, since the property owner had failed to notify the contractor of the hidden obstruction, the higher court held the contractor entitled to receive extra payment *above* the contract price, and said:

"If the natural formations are different from what was expected by the excavator, he cannot claim extra compensation because of the increased cost of doing the work. . . . . Here we have hidden concrete swimming pool. . . . There was nothing to indicate the hidden obstruction. He was within his rights in assuming that the work of excavating would be determined by the character of material which had been placed by nature."

Therefore, it is quite apparent that *silence* of a property owner may represent fraud.

Must Conserve Top Soil

A reader asked this question: "Recently our company leased a farm and agreed to pay a stipulated sum per cubic yard for sand and gravel removed from the land. Nothing was mentioned in the

lease contract about disposition of the top soil. Do we own it, and can we sell and take it from the premises? If not, can the farm owner compel us to put it where he wants it placed?"

A higher court has held that where a lease contract give the lessee the exclusive right to excavate, remove, and carry away sand and gravel and no provision is made in the lease with respect to disposition of topsoil and overburden, the land owner cannot complain if the lessee dumps such material into the pit from which gravel and sand had been removed, nor can the lessor compel the lessee to place such materials on any particular part of the leased premises. However, the lessee cannot remove the topsoil or overburden from the leased property.

For instance, in *Wolfe v. Licking Gravel Company*, 48 N. E. (2d) 254, it was shown that a land owner and a gravel company signed a lease contract involving a 50-acre tract "for the purpose and with the exclusive right to excavate, remove, and carry away sand and gravel". The contract did not contain a clause explaining the disposition of the topsoil and overburden.

The land owner sued the gravel company and asked the court to prevent the company from removing the topsoil and overburden from the premises. The higher court granted an injuction, and said:

"The authorities governing construction of leases uniformly hold that the lessee acquires only such substantive interests in the lands as are specified in the lease itself. Otherwise, of course, the lessor would part with a greater interest than was contemplated."

With respect to where the company must dump the topsoil and overburden, the court said:

"The defendant (company) is under no obligation to put this material on any particular part of the farm or be subject to the direction of the plaintiff (land owner) as to its being placed."

Also, see *Percy LaSalle Company v. Newman Company*, 300 F. 141. This court held:

"In a lease there is an implied negative covenant that the property shall be used only for the purposes for which it is demised. . . ."

Employer Is Negligent

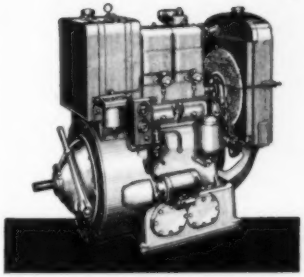
A reader asked this question: "What can the owner of a quarry do to protect himself against damage suits filed by injured employees?"

The answer is: An employer can avoid paying damages to an injured employee by preparing to prove that the injury did not result from the employer's negligence.

For example, in *Scheibe v. Fruin-Colnon Company*, 23 S. W. (2d) 44, the court clearly defines negligence of an employer which entitles an injured employee to recover damages. Here it was disclosed that an employee was seriously injured as a result of a cave-in in a quarry.

The court held the employer liable in damages to the injured employee, stating the following important law on the subject of negligence:

10 REASONS why your next power unit should be a NORDBERG Diesel



1. Expressly developed to meet the need for simple, compact engines of small horsepower.
2. Low initial cost.
3. Choice of 1, 2, or 3-cylinder sizes, ranging from 10 to 45 H.P. or 6 to 30 K.W.
4. Choice of generator, centrifugal pump, stub shaft, or clutch power take-off.
5. Each unit is complete, self-contained, ready to operate.
6. Built to the same exacting standards as the larger Nordberg Diesels.
7. Maximum operating economy—often pays for itself in less than a year.
8. Simple to operate, easy to service, no trained operators necessary.
9. Heavy duty construction throughout for long life.
10. Thermostatically controlled cooling system, heavy duty oil bath air cleaner, fuel and lubricating oil filters and lube oil cooler are all STANDARD on Nordberg units.

NORDBERG MFG. CO., Milwaukee, Wisconsin

NORDBERG
BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY-DUTY DIESELS

MAIL THIS COUPON TODAY

Nordberg Manufacturing Company
Milwaukee, Wis. 4-252—ICQFMOP

Please send literature describing the full line of Nordberg "4FS" Diesel Power Units.

Your Name_____

Company_____

Address_____

City_____ Zone____ State_____

"YOU'LL GET ALL FIVE WITH..."

CLEVELAND WIRE SCREENS

Here are the five qualities essential to satisfactory, long-life Vibrating Screen Section operation . . . they mean *more tonnage* and *less down-time*. Cleveland Wire Screens offer you all five . . . why accept less?

- TOUGHNESS AND DUCTILITY
- LONGER PRODUCTIVE SERVICE
- REDUCTION OF "BREAKS" IN SCREEN
- BUILT AND DESIGNED WITH EXPERIENCED "KNOW HOW"
- RIGID ACCURACY OF OPENINGS MAINTAINED CONTINUOUSLY

Write today for Bulletin No. 6

THE CLEVELAND WIRE CLOTH & MFG. CO.
3576 E. 78th STREET • CLEVELAND 5, OHIO

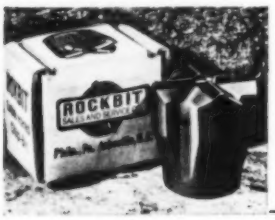
Tungsten carbide, Rok-Bits: 4-Point, Cross-Bit, or 2-Point, Chisel Bit—gage sizes, $1^{3}/_{8}$" to 4".

For fast, economical Secondary Drilling—

INTRA-SET STEEL

steel and bit in one integral unit

TOUGH, tungsten-carbide tipped Intra-Set Steel offers high speed drilling—low bit cost—in either 4-point or chisel types, from $1^{1}/_{8}$" to 2" diameter. Special Rock Bit high grade alloy steel affords trouble-free drilling. Lengths up to 12 ft., shanks to fit any hammer. No attachments to loose, bind or strip. Over 35,000 pieces of Intra-Set already proved on the job. Interested in cutting drilling costs? Write! Rock Bit Sales & Service Co., 2514 E. Cumberland St., Philadelphia 25, Pa. — 350 Depot St., Asheville, N. C.



ROCKBIT
SALES AND SERVICE CO.

CARBIDE ROK-BITS • INTRA-SET DRILL STEEL • LONG HOLE DRILLING TOOLS • HOLE-SAVER • ALL TYPES OF HOLLOW DRILL STEEL

COLPROVIA

PRODUCTS

* * *

PAVING MIXTURES—For New Construction and Maintenance made by Cold and Heated Processes.

TOPSEAL—Preserves all type surfaces: Masonry, Metal, Asphalt, Wood. Prevents gasoline and oil drip damage of asphalt pavements.

GROUNDSEAL—Insulates all type buildings from ground dampness. Conserves heat.

FLUX AND POWDERED ASPHALT—For Plant mix and Mixed-in-place construction.

PAINT—For use on asphalt and masonry surfaces.

IMPACT MIXING PROCESS — For the production of better hot mixtures.

Some exclusive territory open

COLPROVIA ROADS, INC.

51 EAST 42nd ST. NEW YORK 17, N.Y.

183 EAST MAIN ST. ROCHESTER 4, N.Y.

The above Products and Processes are covered by separate patents.

"In cases of negligence the party charged may be held liable for anything which, after the injury is complete, appears to have been a natural and probable consequence of his act or omission. . . . Negligence is as follows: (1) failure to brace the wall; (2) ordering the employee into the ditch when the earth was wet, loose, and likely to cave; (3) failure to warn the employee of the danger; (4) assuring the employee it was a safe place to work; (5) failure to brace the dirt thrown to the surface in digging; (6) failure to exercise ordinary care in inspecting the walls of the quarry."

"As Is" Clause

A reader asked this question: "Recently we purchased certain used machinery under an 'as is' clause in the sale contract. The seller verbally stated that the machine was in good condition. Does an 'as is' clause in the contract mean that the seller is not liable in the event we are *not* satisfied, or the machine is defective?"

According to a late higher court decision, the answer is that under ordinary circumstances, as when the seller makes no deceptive statement regarding the quality of the subject of the sale, the purchaser is bound by the terms of an "as is" clause in a sale contract. However, if the seller verbally states that a machine is in good condition, knowing that the machine is defective, this is fraud for which the seller is liable.

For example, in the case of *Ferguson v. Koch*, 268 Pac. 343, a buyer and seller signed a contract of sale which specified that the machine was sold "as is". Before the purchaser affixed his signature to the sale contract, the seller verbally guaranteed the machine to be in good condition. When the buyer discovered that the seller's statement was false, he immediately sued to recover the full purchase price. The seller attempted to avoid liability on the grounds that the buyer had ample opportunity to examine the machine, and also contended that testimony relating to the verbal guarantee was not admissible as evidence, particularly because the written contract contained an "as is" stipulation.

However, the court held that the seller was bound to take the machine back and refund the purchaser's money. This court said:

"The general rule is well established that where parties deal fairly or at arm's length, the rule of *caveat emptor* applies, but where honest dealing is departed from by the vendor making false statements as of his own knowledge, *the falsity of which is not known* to the purchaser, such purchaser has the undoubted right to rely implicitly upon such statements, and the principle has no application. . . . A purchaser has a right to rely on the presentations of his vendor as to facts not within his knowledge, and the seller cannot escape responsibility by showing that the purchaser might have ascertained upon inquiry that the representations were untrue."

In order that you may clearly understand the law, it is well to explain that a seller never is liable on a guarantee if the evidence proves: (1) that the seller had made the false statement *after* the

contrast was signed; (2) that the seller actually did not know that the quality of the machine was not the same as stated in the written contract, but the seller merely expressed an opinion that he *believed* its quality to be as verbally represented; (3) or that the purchaser did not rely upon or believe the verbal statements made by the seller.

In other words, a seller cannot, without liability, make known false statements regarding the quality of merchandise, irrespective of the contents of a written contract. On the other hand, a seller may expect a purchaser to use his own good judgment to inspect a used machine and determine for himself its quality if it is sold under an "as is" clause, and the seller does not make any fraudulent statement to the buyer.

When Avulsion Occurs

A reader asked: "If the banks of a running stream wash away does this change the boundary lines of real property?"

The legal rule is established that when avulsion occurs, the line dividing the property of riparians remains according to the former boundaries, and not according to the boundaries created by the avulsion.

See *Maufrais v. State*, 180 S. W. (2d) 144. This higher court held:

"The line dividing the property of riparians when avulsion occurs remains according to the former boundaries, and not according to the boundaries created by the avulsion. . . ."

Not Independent Contractor

It is well established law that an employer is not liable in damages for injuries caused by an independent contractor. However, the employee is not an independent contractor if the employer supervises and controls the employee.

For example, in *L. v. M. S. and G. Company*, 51 So. (2d) 347, the testimony showed facts as follows: A truck driver who owned the truck made a contract with a gravel company under which he was required to haul its materials exclusively to customers at any time required by the company, to report at 6 a.m. for loading, and to haul regularly on a daily basis any kind of material. The company reserved the right to terminate the employment for violation of any of these conditions.

One day the truck driver ran over a woman. In subsequent litigation, the higher court held the gravel company liable, saying:

"We are firmly of the opinion that the contract of employment between Jenkins and the gravel company was that the companay retained and had the right to direct, supervise, and control the manner and method in which Jenkins (driver) was to perform the hauling; and had the right to terminate it and his employment for any violation of their instructions or understanding. Under these circumstances, the doctrine of independent contractor has no application."

✓ *CHECK* these advantages of the

GILSON

TESTING SCREEN

√ Makes test accurately and quickly

√ Two to seven separations simultaneously

√ Screen trays independently removable

√ Trays balanced to same tare weight

√ Visible separation to refusal

√ Few moving parts

√ Sturdy construction

√ Size range 4" to 200-mesh

Write for full details

Test-sizing sand, gravel, and similar materials through a GILSON Screen insures uniform products meeting all specifications.

Compact and smoothly operating, the GILSON Screen handles samples up to one cubic foot in five minutes or less.

Attachment available for handling 8" diameter sieves when sizing sand.

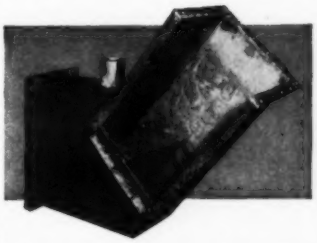
GILSON SCREEN CO., Box 186, Mercer, Pa.

PROTECT YOUR EQUIPMENT TOO WITH

COLMONOY Hard Facing

Colmonoy makes the most abrasion resistant hard facing known—
COLMONOY SWEAT-ON PASTE

- **Colmonoy Sweat-On Paste gives 2½ times the coverage of welding rods of same weight.**
- **Sweat-On Paste is easily applied to constant depth, regardless of contour.**
- **When Sweat-On Paste is fused, hard-facing depth is three times the depth of the overlay.**
- **Application is with a putty knife and carbon arc welding. Any welder can do a good job.**



This section of a material handling chute will last eight times longer with inside surfaces protected with Colmonoy Sweat-On Paste.

Wherever rock and earth are handled: in quarrying, cement manufacture, and construction, Colmonoy protects and saves expensive equipment.

In the form of Sweat-On Paste, rods, electrodes, or castings, *there's a Colmonoy alloy for every hard-facing application.* Write us for complete catalog and information on your specific needs.

ORDER FROM YOUR LOCAL JOBBER

WALL COLMONOY

CORPORATION

HARD FACING ALLOYS

19345 JOHN R STREET DETROIT 3, MICHIGAN

K-P *Engineered*

WIRE SCREENS

* **SIEVING**
* **SIZING**
* **SEPARATING**

Korb-Pettit Wire Screens are not only first quality in material and workmanship but are engineered for the job involved. Available in High Carbon Spring Steel and Oil Tempered Spring Steel for extreme abrasion resistance. Designed for all types of vibrators and rotary equipment.

Wire Screens,
Spiral Woven Wire
Conveyor Belts,
Special Purpose
Conveyors
designed & manufactured
Wire Partitions,
Machine and Window
Guards, Cages,
Enclosures, Grilles, etc.

KORB-PETTIT
WIRE FABRICS AND IRON WORKS
INCORPORATED
Engineers and Manufacturers
1503 No. Mascher St.
Philadelphia 22, Pa.

ASK FOR HANDBOOK NO. 36

traffic news

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 88709 (1)—Proposed to establish on crushed stone, in bulk, in open-top cars, carload, minimum weight 90 percent of marked capacity of car except that when car is loaded to full cubical or visible capacity, actual weight will apply from North Baltimore, Ohio, to Warren, Mich., 189 cents, Utica, Mich., 191 cents net ton.

Docket 88715 (2)—Proposed to establish on agricultural limestone, carload, in bulk, in open-top cars, not protected by tarpaulin or other protective coverings, minimum weight 90 percent of marked capacity of car except that when car is loaded to full cubical or visible capacity, actual weight will apply from Chicago, Joliet, Kankakee and Lehigh, Ill., to destinations in Indiana and Michigan shown in exhibit below:

From Chicago, Joliet, Kankakee and Lehigh, Ill. To:	Proposed Rates in Cents per Net Ton
Hartsdale, Griffith, Liverpool, Willow Creek, Porter, and Michigan City, Ind.	89
New Buffalo, Mich.	101
Niles, Eau Claire, Notre Dame, and Fairland, Mich.	113
New Paris, Milford, and Lessburg, Ind., and Lawton, Benton Harbor, Sodus, Decatur, and Dowagiac, Mich.	125
Kalamazoo, Mich., and Warsaw, Ind.	138

Subject to increases under X-175-A.

CENTRAL TERRITORY RAILROADS
Coal, Coke & Iron Ore Committee

Docket 88738 (2)—Limestone, agricultural or ground, in closed cars, minimum weight 60,000 lb., from Gibsonburg, Ohio, and other northwestern Ohio Group 1 origins to Otter Creek Junction, Ind., 360 cents net ton.

Docket 88743 (1)—Proposed to establish on limestone, natural, ground or pulverized, unburned, carload minimum weight 60,000 lb., from Marblehead and Martin, Ohio, and other northwestern Ohio Group 1 origins to Brightwood, Pa., open cars, 298 cents net ton; closed cars, 348 cents net ton.

Docket 88744 (1)—Proposed to establish on stone, crushed, in bulk, in open-top cars, carload, minimum weight 90 percent of marked weight capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Richmond, Ind., to Fernald, Ohio, 100 cents net ton.

it's O.K.
THE HOIST THAT'S BUILT TO YOUR SPECIFICATIONS
DRUM Single Double Three or 2 Drum Slack
POWER Gasoline, Electric or Diesel
SPEEDS Ft. Per Min. – 24, 150, 200, 240, 280, 500
HORSE POWER 8, 18, 28, 50, 65, 80, 105, 125, 150, 175, 185, 200
CAPACITY – Lbs. – 1300, 2000, 3200, 5000, 7000, 9000, 12500, 15500, 19000
For light work or heavy work in all fields – giving satisfaction since 1903 – and sold with a written guarantee.
Write for free bulletin or name of nearest dealer.
O.K. CLUTCH & MACHINERY CO.
1994 Florence St. Columbia, Penna.

FOR BIG LIFT OPERATIONS...

specify HERCULES *Red Strand* Preformed for the extra *tough* jobs. It stands up better on draglines, derricks, scrapers, shovels and all other equipment. Fewer replacements—less downtime with HERCULES *Red Strand* Preformed.

LESCHEN WIRE ROPE

A. LESCHEN & SONS ROPE CO.
5909 KENNERLY AVE., ST. LOUIS 12, MO.
DISTRIBUTORS IN ALL PRINCIPAL CITIES

Riggers PLAY IT SAFE on "high wire" jobs!

...that's why they demand GENUINE

CROSBY CLIPS

Drop-forged, hot-dip galvanized wire rope fasteners
SIZES FOR ¼" TO 3" WIRE ROPE
DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA

GENERAL FREIGHT TRAFFIC COMMITTEE—Eastern Railroads

Bulletin G-5414 (Carrier)—Proposed to establish on limestone, natural, ground or pulverized, unburned, carload minimum weight 30 tons from Piqua, Ohio, to Houlton, Maine, $8.18 per net ton in open cars and $8.68 per net ton in closed cars. Subject to ExParte 175 increase.

ILLINOIS FREIGHT ASSOCIATION

Docket IRC 511-1109 (MRP-6103)—Proposed to amend agency and individual lines' tariffs naming rates on stone or limestone, ground or pulverized, in closed cars, by the addition of a note reading, "Rates named herein will also apply on limestone or stone, ground or pulverized, when containing not in excess of 3 percent of other minerals either physically or otherwise added". This applies to closed cars from and to IRC territory.

Docket 511-1112—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, molding or silica) in open-top cars, from South Chicago, Ill., to Decatur and Pana, Ill. Present: Decatur, $1.87; Pana, $2.18. Proposed: Decatur, $1.85; Pana, $1.85.

Rates of 2,000 lb. above subject to Ex-Parte 175 only. Minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, but not less than 60,000 lb.

Docket IRC 511-1113—Silica sand, in closed cars from Millington, Ottawa, and Wedron, Ill., to Steelville, Ill., minimum weight 90 percent of marked capacity of car, except that when car is loaded to capacity, actual weight (but in no case less than 40,000 lb.) will apply. Present: class or combination rate applies. Proposed: $2.97 per net ton, subject to Ex-Parte 175-A increase.

ILLINOIS FREIGHT ASSOCIATION

Docket IRC 511-1115 (MRP 6120)—Stone, crushed, as described in item 160 C.R.I.&P. Tariff 2606-R from Utica, Ill., to stations in Illinois on the C.R.I.&P., to points shown below:

From Utica, Ill. To	Open Intrastate	Closed
Joliet and Peoria	100	100
Ottawa and Peru	86	86
Rock Island	113	117
Galva	123	128

Rates subject to X-175-A.
Present: No specific rates in effect. LaSalle or Joliet rates by use of intermediate rule.

Docket IRC 511-1117 (MRP 6122)—Proposed to establish rates on agricultural limestone, carload, from Lehigh, Ill., to Illinois Central Railroad stations shown below:

Rates in Cents per Ton of 2000 lb.	
Kempton, Chatsworth, Colfax, Barnes, Scovel, Pontiac, and Spires, Ill.	65
Minon, ElPaso, Hudson, and Wenona, Ill.	72
Lostant and Tonica, Ill.	72

Subject to tariff X-175-A.

PACIFIC SOUTHCOAST FREIGHT BUREAU

Docket 2473 (S)—Request for rate of 20c, minimum 50 tons, on stone, natural, described in item 2384-C, Pacific Southcoast Freight Bureau 278, Winnemucca, Nev., to Santa Clara and San Jose, Calif. Subject to X-162-6-8-175 increases.

Docket 2490 (S)—Rock, crushed, sand and gravel, carload, from Belen, N. M.

WILLSON
comfortable eye protection

keep on the safe side

wear WILLSON GOGGLES

Willson goggles offer you greatest value because they are carefully designed for comfort and appearance as well as for the eye protection you need. Choose from a wide range of Cup and Cover-All® types like those illustrated. All are fitted with Super-Tough® heat-treated glass lenses—all fully pre-tested. You're sure when you ask for Willson goggles—safer when you wear them.

COVER-ALL® CUP GOGGLE No. CC60

Heavy duty goggles allowing plenty of room for prescription glasses to be worn safely and comfortably.

RUBBER MASK GOGGLE No. X41

Ideal for chemical workers. Rolled inner edge makes them fit snugly with utmost ease.

STYLE DL31

Deep perforated metal cups provide direct ventilation yet exclude dust. Ideal for use in hot, dusty atmospheres.

See your Willson distributor or write for bulletin
WILLSON PRODUCTS, INC.
102 Thorn Street, Reading, Pennsylvania

Request rates to Gallup, 10 cents; Grants, 8½ cents; Perea, South Guam, and Thoreau, N. M., 9 cents, minimum 40 tons.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 9513 (c)—Proposed to establish on phosphate rock, carload, Florida Mines to Corinth, 787 cents; Greenwood, 796 cents; McComb and Oxford, Miss., 813 cents gross ton. Not subject to X-162-6-8 increases.

Docket A 1686—Proposed to establish on sand and gravel, open-top cars, carload minimum weight, item 400, Southern Freight Tariff Bureau tariff 388-G, Garysburg, N. C., to Marford, Va., 120 cents net ton. Not subject to X-162-6-8 increase.

Docket A 9571 (c)—Proposed to establish rate on limestone, ground or pulverized, unburned, carload, 60,000 lb., Anderson, Tenn., to Charleston, 469 cents; and Huntington, W. Va., 444 cents per net ton. Not subject to X-162-6-8 increases.

Docket A 9604 (c)—Proposed to establish a rate of 330 cents per net ton on crushed stone, bulk in box cars, carload, 10 tons, from Lithonia, Ga., to Tampa, Fla. Not subject to X-162-6-8 increase.

Docket A 9734 (a)—Sand and gravel, in open-top cars, unprotected, carload, 90,000 lb., except that when cars are loaded to full cubical capacity, actual weight will govern from Pearl River, La., to Kenner, $1.06; New Orleans, La., 84.8 cents net ton. Not subject X-161-6-8 nor X-175.

FREIGHT TRAFFIC COMMITTEEE TRUNK LINE TERRITORY RAILROADS

TL M-1895 (Shipper)—Proposed to establish on crushed stone and stone screenings, carload minimum weight 90 percent of marked capacity of car, from North LeRoy, N. Y., to Horseheads, N. Y., $1.52 per net ton. Subject to ExParte 175 increase.

WESTERN TRUNK LINE COMMITTEE

Docket E-41-1534 (S)—Limestone, crushed, ground or pulverized, in closed cars, carload, minimum weight as provided in paragraph "B" Item 180-C, Southwestern Lines tariff 162-T Valmeyer and Prairie du Rocher, Ill., to all Western Trunk Line points in Missouri. Proposed—basis 31, Item 1530-H Southwestern Lines, 162-T, increased 10 percent, maximum 15 cents per ton under X-162; 20 percent, maximum 60 cents per ton under X-166; and 8 percent under X-168. Subject to X-175.

Docket E-41-1541 (S)—Proposed to establish a rate on silica sand, carload minimum weight 90 per cent of marked capacity of car, except that when actual weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, actual weight will be minimum weight. In no case shall the minimum weight be less than 40,000 lb., from Clayton, Ia., to Kansas City, Mo., and Atchison, Kans., 340 cents in open cars; 380 cents per ton of 2000 lb. for closed cars. Subject to ExParte 175-A.

Docket X-E-41-1431 (S)—Proposed to establish on crushed stone, carload, minimum weight 90 percent of marked capacity of car, except that when weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, actual weight will apply, but in no case shall the minimum weight be less than 20 tons.

From Alexandria, S. D. To	Proposed Rates Open Cars	Closed Cars or Open-Top Cars Protected by Tarpaulin, etc.
Chicago, Ill., and Milwaukee, Wis.	4.20	4.60
Minneapolis, Minnesota Transfer, and St. Paul, Minn.	3.20	3.60

Rates in cents per ton of 2,000 lb. Subject to ExParte 175 increase.

Docket X-E-41-1535 (S)—Proposed to establish on stone, crushed, carload, minimum weight 90 percent of marked capacity of car, except that when weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, actual weight shall apply, but in no case shall the minimum weight be less than 40,000 lb.

Rates Per Net Ton Proposed From Alexandria, S. D. To	Open Cars	Closed Cars
Barberton and Cleveland, Ohio	641	...
Detroit and Wyandotte, Mich.	536	636
Kokota, N. Y.	734	...
Indianapolis, Ind.	622	...
Kalamazoo, Mich.	516	...
Natrium, W. Va.	780	...
Sturgis, Mich.	516	...

Subject to ExParte 175-A.

Here is a LANDIS 8½ yard side dump trailer behind a Caterpillar tractor.

Now, the LANDIS hydraulic lifts dump the entire load in one smooth operation . . . . eliminating load-hanging.

LANDIS Trailers are engineered to lower YOUR hauling costs

On or off-road LANDIS trailers are engineered to lower your hauling costs by fitting your specific job needs. This means LANDIS trailers do the exact work you intend them to do — *carrying more loads per day*. LANDIS trailers are all-electric welded and smooth surfaced to eliminate load-hanging. LANDIS hydraulic lifts dispose of the load in one operation. There is an end, side or bottom dump LANDIS trailer to fit your needs. Write for additional information today.

LANDIS STEEL CO.

PICHER, OKLA.

P. O. Box 248 Phone 734

HENDRIX

Tops on the Job!

"MY MAINTENANCE TROUBLES ENDED WHEN I HITCHED UP A HENDRIX!"

That's what dirt contractors are saying to each other! Hitch-up a Hendrix Dragline Bucket for digging at lower cost per yard . . . more yards per minute. They know that Hendrix Buckets give them unsurpassed performance with minimum maintenance costs and delays resulting in BIGGER PROFITS ON EVERY JOB! A full load . . . smooth operation . . . clean dumping with less stress and strain on your dragline PLUS long life in heavy-duty service. THAT'S HENDRIX!

3 TYPES
FOR
EVERY DIGGING PURPOSE
¾ to 40 Cu. Yds.

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

Hendrix Buckets Without Perforations On Special Order Only

HENDRIX MANUFACTURING CO., INC.
MANSFIELD – LOUISIANA

"At National Cash Register we believe . . ."

STANLEY C. ALLYN
President, National Cash Register Company

"At National Cash Register we believe a thrifty employee is a better employee and a better citizen. By providing the Payroll Savings Plan for U. S. Defense Bonds we help our employees practice the thrift habit and build up a backlog of savings for their future security. By buying Bonds they become shareholders in their country."

The employee who joins the Payroll Savings Plan becomes *a man with an objective*—a young fellow who realizes that the systematic purchase of Defense Bonds is a sure way to the down payment on a home . . . a father who wants to provide for Junior's college education . . . an older man, with an eye to retirement and personal security.

The man with an objective is a better employee. He knows that a day lost from work is just that much out of his take-home savings. He doesn't take chances—wants to stay off the accident list. He has a new realization that better work on his part will lead to advancement—and a larger monthly allotment for Defense Bonds.

The man with an objective is a better citizen, holds his head a little higher. He is buying a growing share in America . . . helping to combat inflation . . . making a real contribution to the defense effort.

These employee and *employer* benefits of the Payroll Savings Plan are reflected in the records of thousands of companies. Figures show that as employee participation in a Payroll Savings Plan grows to 60%, 70% or higher, absenteeism decreases, the "Lost Time Accidents" curve goes down and production goes up.

If 60% or more of your employees are not Men With Objectives, do something about it. Phone, wire or write to Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, Washington, D. C., and your State Director, Treasury Department, will show you how to install a Payroll Savings Plan, or how to build an existing Plan.

During 1951, over 1,500,000 employed men and women joined the Payroll Savings Plan.

The U.S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

PIT AND QUARRY

April 1952

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

The Michigan Silo Company
Peoria, Illinois
WESTERN DIVISION

February 25, 1952

Stearns Manufacturing Co., Inc.,
Adrian, Michigan

Gentlemen:

For many years we were operators of a Stearns #9 Joltcrete with satisfactory results. Therefore, when increasing demand and labor costs made necessary a faster operating machine, a Stearns 15 was our choice.

The results obtained from the operation of this machine over a period of slightly more than one year have proven our choice to be a wise one. We produce from 15% to 20% more blocks in 8 hours than we did with our #9 Joltcrete in 10 hours, with 25% reduction in labor.

The blocks are more attractive because of their improved appearance, and more desirable because of their great strength and modular measurements.

Without the Stearns 15 and the supporting Stearns equipment, we would be overshadowed by other modern plants. With it, we feel our plant ranks high in comparison with them.

We are glad to recommend Stearns equipment. It has proved its worth to us.

Very truly yours,
THE MICHIGAN SILO COMPANY

By Ezra F. Zuber
SUPERINTENDENT

EFZ:jc

STEARNS 15
the logical step UP

This Stearns 15 in the Michigan Silo Company plant has proved to be the one answer to rising labor costs and increasing demands for quality block. Fully automatic. One-man operation. Plain pallets. Power pallet handling. 12-18 eight-inch units per minute, three blocks per cycle. High production and uniform density of units, top to bottom, made possible by Stearns Dual Shaft Vibration under Pressure.

Executives of Michigan Silo are, l. to r.: James E. Clarkson, bookkeeper-cashier; Emil F. Zuber, supt., and Carroll C. Hamm, asst. mgr. The 33-year-old plant in Peoria, Ill., is all under one roof. The company also operates a Stearns 50-cu.-ft. Mixer, a 50-cu.-ft. Skip and a Pallet Return. Territory, 50-mi. radius.

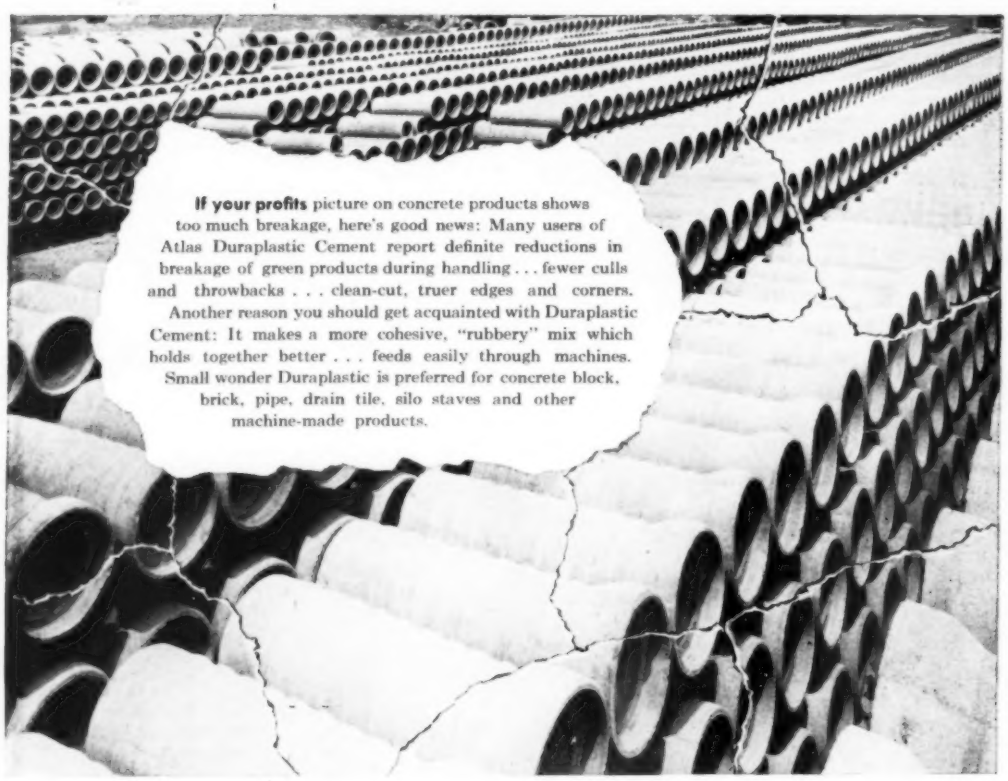
Record sales speak for themselves

STEARNS
MANUFACTURING COMPANY · INC
ADRIAN • MICHIGAN

STEARNS 15 STEARNS 50 ZIPPERS JOLTCRETES MIXERS SKIP LOADERS TURNTABLES SHIVERLITE

Products manufacturers report

LESS BREAKAGE WITH DURAPLASTIC*



If your profits picture on concrete products shows too much breakage, here's good news: Many users of Atlas Duraplastic Cement report definite reductions in breakage of green products during handling . . . fewer culls and throwbacks . . . clean-cut, truer edges and corners. Another reason you should get acquainted with Duraplastic Cement: It makes a more cohesive, "rubbery" mix which holds together better . . . feeds easily through machines. Small wonder Duraplastic is preferred for concrete block, brick, pipe, drain tile, silo staves and other machine-made products.

YET DURAPLASTIC COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with both ASTM and Federal Specifications. Send for complimentary booklet with detailed information. Address Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"Duraplastic" is the registered trade mark of the air entraining portland cement manufactured by Universal Atlas Cement Company

PQ-D-137

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

ATLAS®

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

A UNIVERSAL ATLAS PRODUCT

Makes Superior Concrete Products at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

The CONCRETE MANUFACTURER April 1952

STATEMENT OF PURPOSE

WHEN we started several months ago the practice of running regular editorials in THE CONCRETE MANUFACTURER, we intended to lead off the series with what we hoped would be a clear statement of our purpose in thus launching an entirely new department in a publication which was already straining to find space for the rich and varied selection of material at its disposal. Other subjects of a more timely nature caused the postponement of our original plan, but right now we would like to break stride long enough to state what we believe to be the principles and objectives of this still new department of your magazine.

In editing any trade journal it is difficult, if not actually impossible, to avoid a subtle implication that the unique end and aim of creation is to produce and market the particular line of goods, materials, or services which concern the readers of the publication. It is assumed, and probably rightly so, that intelligent readers will turn to other sources for information concerning matters that bear only very indirectly, or not at all, upon the immediate field from which they gain their livelihood.

Today, however, it is no longer as easy as it once was to differentiate between matters which directly affect a particular branch of business or industry and those which have only an indirect influence. Developments in the complex fields of politics, international affairs, labor-management relationships, and monetary policies will almost certainly have a more profound and far-reaching effect upon the future prosperity of the concrete industries than all of the bustling activities currently directed toward the solution of production and marketing problems. To cite an example of some immediate interest, of what earthly use is it for the operator of a business to struggle for solvency when the government itself is hell-bent for bankruptcy?

It is our hope on this page to bridge now and then the no-longer very wide gap between matters of obvious and immediate concern to our readers and the larger issues which we believe may ultimately determine the conditions and the restrictions under which they will be required to operate their businesses. We will be saying, in effect: "Look, fellows, it's all very well to worry about curing, or shrinkage cracking, or segregation, or the hydrogen sulphide problem, but here's another little matter that concerns you and your business."

It will be our main purpose here to state problems, rather than to attempt to solve them, in the hope of now and then causing a small segment of opinion to coalesce. We believe there is foul weather ahead, and that it behooves all men to take an anxious, searching look at the prospect before us.

William M. Avery

the BUSINESS END of a profitable operation

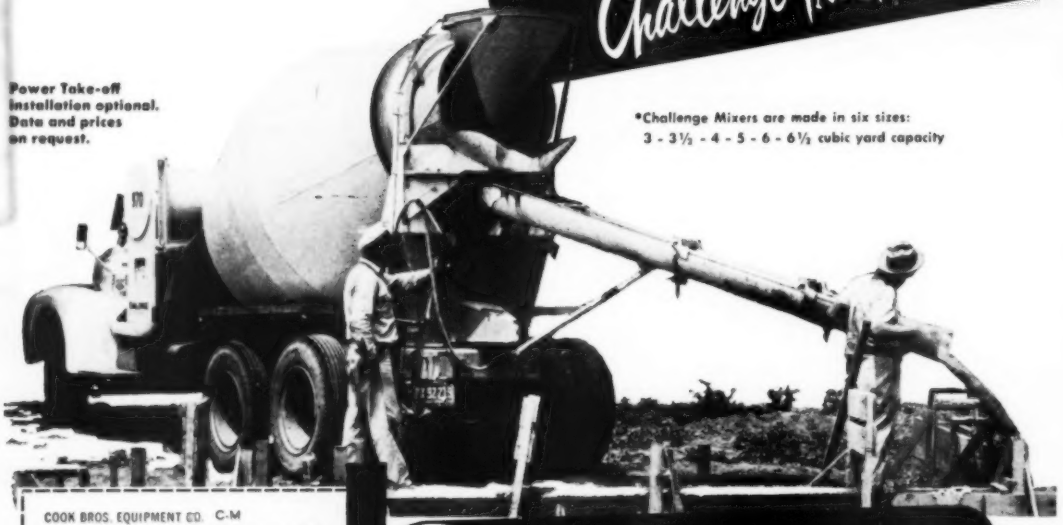
Challenge Mixers have everything you want . . . low first cost . . . minimum maintenance . . . lower repair and replacement cost . . . greater legal payload capacity . . . all rolled up into one.

From the day you take delivery of a Challenge Mixer you'll start a more profitable operation! (That's why more and more operators are standardizing on Challenge fleets.) Each size* Challenge Mixer is engineered to legally carry its full, rated-capacity payload . . . a feature especially important in states where weight laws are strictly enforced, and one that makes it possible to take full advantage of both the physical and legal capacity of your particular truck.

See for yourself why Challenge is the "business end" of a profitable ready-mixed concrete operation. Compare it with any mixer on your own job, with your own crew.

MEMBER NRMCA

Challenge Truck Mixers



Power Take-off installation optional. Data and prices on request.

*Challenge Mixers are made in six sizes: 3 - 3½ - 4 - 5 - 6 - 6½ cubic yard capacity

COOK BROS. EQUIPMENT CO. C-M

Please send name and address of nearest Challenge dealer where we can arrange an actual demonstration.

NAME _____

FIRM NAME _____

ADDRESS _____

CITY _____ STATE _____

COOK BROS. EQUIPMENT CO.

1815 No. Broadway, CApitol 2-9111, Los Angeles 31, Calif

Exclusive National Distributors for CHALLENGE, The Modern, Streamlined Truck Mixer

news of the concrete industries

Four Denver Pre-Mix Firms Form Pre-Mix Concrete Headed by J. Hackstaff

Four Denver firms engaged in various phases of the pre-mix concrete business are being merged into a single company to be known as Pre-Mix Concrete, Inc.

Involved in the merger are the Colorado Pre-Mix Concrete Company, owned by Hoyt E. Stice; the Central Mix Concrete Company, headed by Elmer Peterson, Hoyt E. Stice, Nate Burt, and Robbert Smith; Concrete Inc., whose officers are E. J. Hackstaff, Fred D. Hoppe, and Randall Pryor; and Trucking Inc., headed by Pryor and Hoppe.

Officers of Pre-Mix Concrete, Inc., will be as follows: Jesse Hackstaff, president; Randall Pryor, vice-president; Nate Burt, vice-president; Elmer Peterson, treasurer; and Fred Hoppe, secretary. Pre-Mix Concrete, Inc., will be the parent corporation and sales representative for the other companies.

Trucking Inc., will be the truck maintenance and sand-and-gravel division, but the composition of the other divisions has not been determined. Purpose of the merger, according to Hackstaff, is to cut costs and provide better service to contractors by eliminating duplications.

23rd N.R.M.C.A. Convention Scheduled at San Francisco

In 1953 the 23rd annual convention of the National Ready Mixed Concrete Association will be held on February 23 to 26 at the Hotel Fairmont in San Francisco.

Although there will be no exhibit in connection with the convention, those attending will be able to inspect some fine ready-mixed concrete plants in the San Francisco area. Because of the limited facilities of the Fairmont, plans will be worked out by the association for adequate housing.

A. A. Levison Appointed Blaw-Knox Div. Executive

Officials of the Blaw-Knox Company, Pittsburgh, Pa., have announced the appointment of Arthur A. Levison as vice-president and general sales manager of its Blaw-Knox Division. Mr. Levison has been a division vice-president in charge of the construction equipment department.

A. A. Levison

It was also announced that H. Russell Loxterman has been appointed assistant general sales manager of the Blaw-Knox Division. In addition to his new duties Mr. Loxterman will continue as manager of the steel plant equipment department.

Coming Events

April 7-9, 1952—*Cleveland*. Seventh annual meeting and lubrication show, American Society of Lubrication Engineers. Hotel Statler.

June 23-27, 1952—New York. 50th anniversary meeting and exhibit, American Society for Testing Materials. Hotels Statler and New Yorker.

February 23-26, 1953—San Francisco. 23rd annual convention, National Ready Mixed Concrete Association. Hotel Fairmont.

Featherlite Gives $2,500 For Contest Prize Money In Texas Competition

According to *The Texas Architect*, the Featherlite Corporation of Dallas will provide $2,500 for prize money in the 1952 student competition for architectural excellence which is sponsored by the Texas Society of Architects. Last year the firm contributed $2,000 for the same purpose.

Last year's competition was held for fifth-year students of the five architectural schools of Texas, with each school setting its own problem for its students. First, second, and third places were judged in each school and sent to San Antonio for the best drawing in the state.

Herbert M. Tatum, president of T.S.A. stated that the co-operation of Featherlite is a valuable aid to the society's project of encouraging young students of architecture.

Universal Concrete Pipe Co. Schedules Nashville TV Show

Universal Concrete Pipe Company, Columbus, Ohio, has scheduled another "TV First". Starting April 1, the company is sponsoring a 15-minute news broadcast by Jud Collins twice weekly at 10 p. m. over WSM-TV at Nashville, Tenn. This is believed to be the first time a concrete manufacturer has sold sewer pipe and block via the video screen.

Program viewers will be offered sets of architectural plans for farm building construction. The offer is made to stimulate block sales and to test response to the telecasts. Universal's Nashville plant is situated at 485 Craighead Street. Thurman Manley, manager, and Billy T. Sumner, head the production and sales staff.

Quality Concrete Products Company, Tifton, Ga., has erected a two-story plant and has acquired new equipment which will almost double the present production, according to George J. Sumner, owner. In addition, Mr. Sumner reported, the firm plans to install new equipment for making ready-mixed concrete. These improvements will represent an investment of $20,000, according to the local press.

• With this means of delivering tile, the customer gets it right where he wants it—on the roof.

Florida Concern's Products Delivered by High Lift Truck

Operators of the Patent Tile Company's plant at Opa Locka, Fla., use lift-trucks to deliver their products to the rooftops of buildings as a special free service to their contractor customers. For this work a "Hi-lift" truck, distributed by the Gaynon Iron Works of Jacksonville, Fla., was selected. The equipment cuts down time and expense, and eliminates complaints that drivers unload tile at the wrong spot—on the ground, for instance!

The Gar Wood Company of Detroit, Mich., makes the hydraulic lift equipment for the trucks. A purchaser may select any make of truck, and the Gaynon firm installs the bed and lift mechanism. The Hi-lift truck can be provided with an attachment for use as an ordinary dump truck.

American Pressure Pipe Assn. To Use "Time" Advertising

The board of directors of the American Concrete Pressure Pipe Association recently decided to start a monthly advertising program in *Time* magazine to sell re-inforced concrete pressure pipe *vs.* cast-iron and steel pipe.

A committee has been appointed to determine the type and scope of the advertising to be used, and the program is to start as soon as possible. Member-companies will pay for the advertising on the basis of their annual production.

"Adjusta-Wate" Wins Prize Worth $16,000 for Producer

John Knudsen won a most unusual prize on the opening day of the National Ready Mixed Concrete Assn. convention held recently at the Conrad Hilton Hotel in Chicago. He was declared winner of a contest conducted by the Construction Machinery Division of Chain Belt Company to find names for two new sizes of Rex Moto-Mixers. Mr. Knudsen won a novel double-feature prize—any two Rex machines of his choice, valued up to about $16,000. The winning name was the Rex "Adjusta-Wate", which in Mr. Knudsen's opinion most closely described the new machine. On his entry blank Mr. Knudsen described the machine as "the only truck mixer with numerous ways of adjusting the weight on front and rear axles".

Mr. Knudsen is president of the Knudsen Concrete Products Company of Dwight, Ill. He selected two Rex 5½-cu. yd. Adjusta-Wate Moto-Mixers for his duplex prize. (See cut below.)

J. H. Van Alsburg, who was formerly associated with the Lith-I-Bar Company, Holland, Mich., now represents the Stearns Manufacturing Company, Inc., Adrian, Mich., in Texas, Oklahoma, Arizona, and New Mexico. The appointment became effective on January 1 of this year. His headquarters are at 1313 Canyon Road, Santa Fe, N. M.

• Robert Horton, Chain Belt Co., congratulates John Knudsen on winning the name contest. George Hartley, Eighmy Equipment Co., looks on.

Independent Design Plan For Prestressed Concrete Announced by Preload

The new, economical principle of engineering design known as prestressing, is now made available to all architects, engineers, and contractors as a result of a drastic change in policy announced by the Preload Company, Inc., one of the oldest firms in the United States in the field of prestressed design and research. Primary result of Preload's policy change is to place prestressed concrete on equal terms with reinforced concrete and structural steel as one of the three basic construction materials.

The theory of prestressed design provides for the elimination of undesirable stresses in a load-carrying structure by introducing into it artificial stresses which are directly opposed to those to which it will be subjected when the load is imposed.

In the case of prestressed concrete the elimination of undesirable stresses makes possible important savings in the quantities of steel and concrete required to support a given load, as compared with the amounts of these materials which would be needed if the construction were of conventional reinforced concrete or structural steel. Structures already completed in prestressed design in the United States have been erected with savings of 40 to 60 percent in concrete and as much as 75 to 80 percent in steel that would have been required for a conventional design.

The Preload Company is believed to be the only independent American designer specializing exclusively in prestressed construction. Since its inception in 1934 it has designed ten bridges having a combined length of more than five miles, approximately 700 tanks with capacities ranging from 100,000 to 11,000,000 gallons, and more than 100 miles of pipe operating under pressures up to 300 pounds per square inch.

Whipple, Van Atta Assume New Duties on A.C.I. Staff

Harvey Whipple, secretary of the American Concrete Institute since 1919 and treasurer since 1921, has been named editorial consultant to that organization by its board of direction. Fred F. Van Atta has been appointed acting secretary-treasurer.

Mr. Whipple, who had served a number of years with the Detroit *Free Press* and the Detroit *News* and at the time was managing editor of *Concrete-Cement Age*, became part-time secretary of A.C.I. in November, 1919, when the Institute's membership was 232. Largely through his continuing efforts, the present membership is in excess of 5,600. In 1921 he assumed the responsibilities of Institute treasurer and filled the dual role until this year.

In 1920 Mr. Whipple inaugurated the A.C.I. *News Letter*, which became a part of the *Journal* of the American Concrete Institute when that technical periodical was launched under his guidance

in 1929. In its 23 years the *Journal* has published the results of research, design, and construction activities of many of the experts in these phases of concrete work and has become a recognized authority in this field.

Mr. Van Atta was graduated from Michigan State College in civil engineering and engaged first in research on aggregate at the Michigan Engineering Experiment Station. Later he worked on precise level surveys with the Coast and Geodetic Survey, on foundation investigations and early construction phases of Kentucky Dam of the Tennessee Valley Authority, and in the development of hydrology, hydraulic design, and hydraulic model studies for the Los Angeles District of the Corps of Engineers.

During World War II Mr. Van Atta served as assistant to the district engineer, Charleston, S. C., in charge of planning and construction of aircraft warning stations and plans and specifications for harbor defenses, railroad facilities, concrete and timber wharves, earth fill, concrete and asphalt paving, etc. In the Philippines he was responsible for the reconstruction of major bridges near Manila.

W. N. Fry, Jr., president of the Fischer Lime and Cement Company, Memphis, Tenn., has announced the following promotions in the firm:

Carroll L. Joachimi, who joined Fischer in 1950, was named assistant to the president; Elmer Blalack, who came to the company in 1951, was appointed advertising and sales promotion manager, taking over Mr. Joachimi's former duties; James A. Prewitt, who joined Fischer as general auditor in 1949 and later became controller, was named assistant secretary and treasurer; and Frank B. Stewart, who started in the company's shipping department in 1948, became traffic manager.

Autoclave Bldg. Products Assn. Holds Annual Meeting at New Orleans

THE Roosevelt Hotel at New Orleans, La., was the scene of the 46th annual convention of the Autoclave Building Products Association on February 27, 28 and 29.

Elmer R. Coats, president of Air-Lite Products Corporation and vice-president of Mutual Materials Company, both of Seattle, Wash., was re-elected as president of the Association for the coming year. Also re-elected for this year was Dale Cobb, sales manager of the Century Brick, Monroe, La., secretary - treasurer. Leo J. Ryan, president of Ryan Builders Supplies, Ltd., Windsor, Ont., Canada, was elected vice-president, and William Gichner, president of the Gichner Building and Supply Co., Bowie, Md., is the new liaison officer at Washington, D. C.

A welcome was extended to the guests on the first day of the sessions by Warren Smith of the Lone Star Cement Corporation. Mr. Smith also addressed the members on the outlook for cement availability in 1952. Other speakers at the opening meetings included George McDearman, Baton Rouge, La., who spoke on expanded clay; Noel Harter, Harter Marblecrete Stone Co., Oklahoma City, Okla., who reported on Toledo University projects in volume change in concrete units; Haakon Paulson, Besser Mfg. Co., Alpena, Mich., who discussed the availability of concrete products equipment; and Dr. F. O. Anderegg, John B. Pierce Foundation, Raritan, N. J., who spoke on autoclave building products in Europe (Sweden, Germany and Holland).

Speakers from "abroad" on the program the second day were R. S. Linford, Colortone Brick, Ltd., Melbourne, Australia; Leo J. Ryan, Ryan Builders Supplies, Ltd., Windsor, Canada; and S. Dilnot, mechanical engineer and consulting technologist, England. In addition there were talks by Dr. Lansing S. Wells, National Bureau of Standards, and Carl Miller, Pacific Brick Co., Pacific, Mo. Discussion periods were interspersed throughout the two days. On the evening of the 27th members enjoyed a moonlight harbor trip.

The Autoclave Building Products Association is the successor of the Sand-Lime Brick Association, an organization founded in 1904 by manufatcurers who pioneered in the development of sand-lime brick in America, and who were active in procuring standards and specifications for the product which has become one of the recognized building materials in the construction field.

In later years sand-lime brick manufacturers who started producing concrete building units discovered that with the same autoclave curing equipment used in the manufacture of sand-lime brick they could turn out a better-cured and higher-quality concrete product. Realizing the need for methods of producing more stable concrete products, producers became deeply interested in promoting the autoclave method of curing.

A considerable amount of research has been carried on during the last 20 years on the merits of the autoclave method, and efforts have been directed toward developing recognized standards of manufacture. This phase of activity is being conducted by the Concrete Products Committee of the Association.

Frederick W. Reinhold, president of the Anchor Concrete Products, Inc., Buffalo, N. Y., was named state general chairman for the 1952 Cancer Crusade.

E. R. Coats, Autoclave Assn. president

Dale Cobb, association secretary-treasurer

L. J. Ryan, A.B.P.A. vice-president

Canadian Block Association Meets In Windsor

THE third annual convention of the National Concrete Products Association of Canada was held in Windsor, Ont., at the Prince Edward Hotel on February 14, 15, and 16. The organization put on its second exhibit of concrete products equipment and allied supplies in conjunction with the convention.

A. D. Wylie (Economy Fuels, Hamilton, Ontario), president of N.C.P.A., welcomed the members for the third time as he has been president of the organization since it was started in May, 1949. He expressed his appreciation to all members and to the board of directors for their work and efforts during the last year and in preceding years.

The highlight of the first session was an address by H. Sheppard, past president, Ontario Association of Architects, Windsor, on *Architecture and its Problems*. According to Mr. Sheppard, the feeling of the architects in Canada appears to favor the adoption of modular dimensions for all building materials. "Modular" means standardization and the bringing together of all building materials in co-ordination for easy assembly into the complete building or structure. Modular dimensions naturally would be beneficial to the architect in his layout planning and designing.

Mr. Sheppard discussed the use of the lightweight block and strongly recommended that the market for this product be expanded and developed. He indicated that some block producers in Canada are not careful in maintaining a standard of high quality, and that many times architects refuse to consider block in their original plannings because of the poor quality of block furnished by certain manufacturers. He recommended that the Association strive to promote and maintain quality and warned against careless handling of block in transit and on the job.

E. L. Silver, manager of the Windsor Credit Bureau, gave a very informative address entitled *Credit and its Place in Your Organization*. He pointed out the pitfalls of a loose credit policy, as well as the undesirability of too rigid credit plan. Credit is important to the growth of any business if it is to continue and prosper.

E. Henley, Charles Warnock Co., Toronto, discussed aggregates. He urged producers to watch for inorganic materials in their aggregates, which may be the cause of inferior concrete. Proper gradation of the material used is all-important, the speaker declared, and added that careful analysis of the aggregate, rather than guesswork, be the rule.

R. Davidson, executive secretary of N.C.P.A., in his report told how the group has expanded since 1949. During 1951 directors' meetings were held in various sections of Canada which were attended by the board members on their own time and at their own expense. N. C. P. A., the recognized mouthpiece for the concrete products industry in Canada, interprets legislation to its members and has instituted a well founded insurance program for its members. The Association now has almost 70 regular members and about 20 associate members. The budget is limited but much work is being done and more is planned for the future. Mr. Davidson asked the members to read the by-laws of the Association and to be ready to vote for their adoption later in the meetings.

During 1951, said Mr. Davidson, the members of the Association sold over $200,000,000 worth of block. He indicated that the future of the concrete products business in Canada depends on the Association and its members.

Professor Robert F. Leggett of the National Research Council, Ottawa, gave an address at one of the luncheon meetings on *Recent Progress in Building Research in Canada*. Professor Leggett is a director of the Building Code Council in Ottawa. He stated if the members will follow the published objectives of their Association, they will have continued success and prosperity. He added a suggestion—"Do not use concrete block where it shouldn't be used. . . . There is a place for it; do not try to over-do it by recommending block for uses where it is not suitable."

Professor Leggett gave a brief discussion of the National Research Council of Canada, which was formed in 1917 and which in 1927 became a public research agency outside the normal government framework. By means of its staff of 4,000 persons it provides a public research service to the people of Canada.

The Division of Building Research had its first meeting in 1947; it now renders a research service to the construction industry in Canada. It has a staff of 85 persons and operates throughout Canada. Interchange of ideas and information is carried out with all other building research organizations in the world. It is not a

(*Continued on page* 161)

• Officers of the National Concrete Products Association, left to right: Ross Cooper, treasurer; A. D. Wylie, retiring president; W. C. Coupland, president; and Garnet W. Fraser, first vice-president.

• On the opposite page are views of some of the manufacturers' display booths in the exhibit held in connection with the convention. It was the second equipment show for N.C.P.A., which may put on an exposition of this kind biennially.

• A view of the armory at Windsor, Ont., scene of the manufacturers' show. This photograph was taken during a memorial service for the late King George VI.

Successful Convention Of Concrete Institute Held at Cincinnati

another ON THE SPOT report

THE forty-eighth annual convention of the American Concrete Institute, held at the Netherland Plaza Hotel in Cincinnati, Ohio, on February 26, 27, and 28, 1952, was highly successful in respect to both attendance and interest. The registrations exceeded 650, which was the second-largest turnout in 15 years. Although most of the technical papers evoked lively discussion from the floor, all sessions were run off punctually as scheduled. An exceptionally large number of technical committees held meetings at hours not devoted to program sessions.

The new president of the Institute is A. T. Goldbeck, National Crushed Stone Association, Washington, D. C. A special luncheon on Thursday, February 28, was held to honor Harvey Whipple, veteran secretary-treasurer of the organization, who retired from office at the close of the convention. Stanton Walker, Washington, D. C., who was chairman of the committee in charge of the luncheon, presided. Professor H. J. Gilkie, Iowa State College, reviewed Mr. Whipple's contribution to the work of the Institute during his continuous service of over 32 years. He announced that a suitable gift for the Whipples' home would be purchased with contributions received from their many friends; this gift subsequently took the form of a fine radio-phonograph.

Prestressed Concrete After a period for registration on Tuesday morning President Harry F. Thomson, Material Service Corporation, Chicago, opened the first technical session, which was devoted to prestressed concrete. A paper on *Relative Economy of Conventional and Prestressed Reinforced Concrete Reservoirs* by Messrs. Ernst, Brunken, and Riveland of the University of Nebraska, was presented by Professor Ernst. A series of alternate designs for concrete reservoirs of various heights up to 30 ft. and capacities of 2,000,000 to 6,000,000 gallons were analyzed for relative costs. For the larger capacities the cost of prestressed structures ran from 65 to 81 percent of the cost for conventional reinforced designs.

Field Problems in Constructing a Prestressed Concrete Bridge were discussed by C. L. Johnson, Pontiac, Mich. The bridge, having three equal spans of 45 ft. each, was built with girders made of assemblies of precast blocks held together by compression cables. Although the cost of the first bridge of this type was somewhat higher than estimates for conventional reinforced flat-slab construction, the unit cost for later projects showed a steady decline as contractors became familiar with prestressing techniques. This was considered by Mr. Johnson as an indication that the cost of prestressed construction would shortly fall below that of ordinary reinforced type.

Durability And Curing The afternoon session was devoted to discussions of durability and curing. A. T. Goldbeck was chairman of a symposium on durability, comprising two papers on railroad structures, one on concrete pavements, and two on hydraulic structures. The first paper on *General Condition of Concrete Railroad Structures*, by C. B. Porter of the Chesapeake and Ohio Railroad was presented by W. C. Schakel of the New York Central Railroad. A recent survey by the American Railway Engineering Association showed that structures built in the "wet era" prior to 1910 had been expensive to maintain, but that structures built since 1928, when efforts were directed toward quality concrete had been, in general, very satisfactory.

Harry F. Thompson (Material Service Corp., Chicago) past president, A.C.I.

A companion paper by G. W. Gilmore of the Baltimore and Ohio also pointed out that some of the early concrete used by the railroads had contained too much water, and that some had been mixed with water which contained organic matter. The railroads are now paying special attention to the selection of sound aggregates, as in some areas there has been difficulty from expansion due to alkali-aggregate reaction. He also voiced the opinion that most structures built in recent years, under adequate supervision, are giving excellent service.

In a paper on the durability of concrete pavements, Frank H. Jackson, Bureau of Public Roads, Washington, and past president of the A.C.I., cited the following factors for obtaining good concrete: (1) cement of Type 1 or 2 plus an air-entraining admixture; (2) the best available aggregates; (3) mix designed for 1- to 2-in. slump, with air content of 5 percent; (4) construction equipment in good condition; and (5) good inspection. He concluded by stating that entrained air will make concrete as durable to weather as can be expected in the immediate future, although air does not offer full protection against the heavy use of salts.

Companion papers on hydraulic structures by L. H. Tuthill, Bureau of Reclamation, Denver, and B. W. Steele, formerly with the Corps of Engineers, emphasized that concrete in such works will be durable if proper precautions are taken in the construction. Mr. Tuthill suggested that the mix should be sufficiently stiff to avoid water coming to the top of a lift, that special precautions be taken to obtain tight joints, and that good vibration be used; he mentioned that using an extra sack

Goldbeck becomes president—Whipple retires

of cement often pays. Mr. Steele stated that air entrainment reduces permeability, and is therefore an aid toward good durability, though not a cure-all. He pointed out that prestressing reduces the tendency to crack. He proposed the need of a yardstick for evaluating permeability, especially when high strength is not the basic consideration.

There followed a round-table discussion on curing, for which Mark Morris, Iowa State Highway Commission, was chairman. An outline of the *Concepts of Principle of Curing* by A. G. Timms, National Bureau of Standards, was read by Mr. Jackson. This statement pointed out that proper curing insures the presence of water for hydration, and that for durability, a drying period, with temperature not falling below 40 deg. F., should follow the damp curing. The two methods of curing are (1) wet covering as by burlap, pads, or ponding, and (2) application of a liquid sealing membrane. D. L. Robinson, Missouri Highway Department, reviewed the current practices of various highway departments in curing pavement slabs. The methods most widely used are (1) a sealing membrane, (2) burlap or pad covering, and (3) impenetrable paper covering. The time for water application is at least three days, though 24 states require 7 days.

Professor H. J. Gilkie, a past president of A.C.I., discussed curing of miscellaneous structures. He stated that after the formal curing with protection, wide ranges of temperature should be avoided to prevent stresses beyond the strength which had been developed. While saturated, the concrete is vulnerable to freezing, the capillaries being filled with water; however, the concrete is safe against freezing after a strength of 1,500 lb. has developed.

Curing Mass Concrete was discussed in a paper by W. R. Johnson, Portland, Oreg., and R. W. Carlson, Berkeley, Calif. Cracking may occur in a thick mass when the internal temperature is rising and the surface temperature is falling; such conditions may require cooling coils in the mass. Curing in freezing weather may require membrane treatment. It was also recommended that the surface be sprayed after removal of the forms if the temperature is above 40 deg. *Curing Canal Lining* was covered in a paper by G. E. Burnet, Bureau of Reclamation. Use of a surface membrane is most common. Practice has gone through the stages of a bituminous compound, through a clear sealing compound, and currently a white, pigmented compound. The white pigment aids in judging a uniform application. The membrane is applied promptly after the water sheen disappears.

The symposium closed with a paper on *Curing Agents* by H. C. Vollmer, Emergency Transportation Department, Washington, D. C., which pointed out that in structural work the forms contribute importantly to the curing process. Surface membrane coatings have come into extensive use since World War I. In the precast field, steam curing is used widely, and lately pressure curing is finding increased use. The paper emphasized that adequate curing offers the factor of safety needed to insure that the concrete attains the desired qualities.

Henry L. Kennedy, Boston

A. Allan Bates, Chicago, A.C.I. director

A. T. Goldbeck, new A.C.I. president

Ultimate Load On Wednesday four technical sessions were held, two concurrently in the forenoon and another two in the afternoon. *Ultimate Load Design* was the topic discussed at one of the morning sessions, for which Frank H. Jackson was chairman and Leo H. Corning, Portland Cement Association, Chicago, was the session leader. A series of papers presented various phases of the ultimate load idea, *i.e.*, designing within the ultimate strength of the reinforced concrete, which has been advocated by many designers as an advance in practice. The several papers included the following: *Ultimate Load Theories* by B. G. Anderson of Amman and Whitney, New York City; *Fundamental Concepts* by Professor E. Hognestad, University of Illinois; *Research on Ultimate Strength* by Professor *C. P.* Siess, also of the University of Illinois; *Design by Ultimate Load Theories* by R. C. Reese, Toledo, and *Load Factors* by Professor T. Y. Lin, University of California. Several

discussions from the floor acknowledged the economies which would result from ultimate load designs, but expressed doubt that engineers are ready to adopt such practices because many feel uncertain regarding the ultimate strength of a given reinforced concrete structure.

Materials And Properties Of Concrete At the concurrent session on materials and properties of concrete, the chairman was President Harry F. Thomson. The first two papers presented recent laboratory tests on the controversial subject of the effects of temperature changes on various aggregates, and consequently the durability of concrete containing these aggregates; the first paper reported work at the Waterways Experiment Station, Jackson, Tenn., written by D. Bloem, Stanton Walker, and W. G. Mullen. The discussion indicated distinct differences in the procedures of the two studies.

A summary of the whys and wherefores of *Calcium Chloride in Concrete* was presented by J. J. Shideler, Bureau of Reclamation, Denver. On the good side he cited advance in time of setting, faster development of strength, and some increase in ultimate strength. As to poor features he mentioned reduction in resistance to freezing and thawing, increased shrinkage, and lower resistance to sulphate attack. G. M. Smith reported an investigation by Professor C. H. Scholer and himself, both of Kansas State College, on *The Use of Chicago Fly Ash to Reduce Cement Aggregate Reaction*. Tests had shown that fly ashes from all sources are not equally active. For an ash recognized as active, the addition of 20 percent of the weight of cement in paving concrete had been found reasonably adequate for preventing the reaction, but in some cases the addition of 30 percent was better.

Tests on *The Bond in Welded Wire Fabric Reinforced Concrete* were reported by Arthur R. Anderson, Tacoma, Wash. Three- and 4-in. slabs, 30 by 66 in. in area, listed as beams, with SR-4 strain gauges on the longitudinal wires, showed that the pull-out strength was increased greatly by the welded transverse wires, that the strain was greater on the central wires than those adjacent, and that the welds of the transverse wires seldom failed.

Awards Luncheon The annual awards luncheon, held in the handsome Hall of Mirrors, at which President Thomson presided, was well attended and was a lively and enjoyable affair. In opening the formal meeting, Mr. Thomson commented on the presence of nine of the living past presidents of the Institute as indicating the sustained interest by "old-timers". Recipients of the Institute's special awards were presented by Professor C. H. Scholer to the president, who presented the following awards under authorization by the board of directors:

Raymond E. Davis, University of California, past president, received the Henry C. Turner gold medal for "outstanding contributions to the technology of concrete".

Douglas E. Parsons, Bureau of Standards, also a past president, received the Alfred E. Lindau award for "directing and co-ordinating development of standards of design practice".

Walter H. Price, Bureau of Reclamation, received the Leonard C. Wason medal for the "most meritorious paper" in the last volume of A.C.I. *Proceedings*.

W. J. McCoy and A. G. Caldwell, both with the Lehigh Portland Cement Company, received the Leonard C. Wason medal for "noteworthy research".

Otto Safir, consulting engineer, Vancouver, B. C., was unable to be present to receive the A.C.I. Construction Practice Award for a paper of special merit on concrete construction.

New Officers The report of the election tellers showed the following officers and directors had been elected: Albert T. Goldbeck, Washington, D. C., president for one year; Chas. H. Scholer, Manhattan, Kans., vice-president for two years; A. Allan Bates, Chicago, Ill., director for three years; J. W. Kelly, Berkeley, Calif., director for three years; F. N. Menefee, Ann Arbor, Mich., director for three years; and Bailey Tremper, Olympia, Wash., director for three years. After this report each of the new officers was introduced. Mr. Goldbeck spoke briefly of his pleasure on being inducted.

Honor Men Mr. Thomson introduced a new note by calling forward the following men who would retire from the board of directors at the close of the convention, and presenting to each a certificate of appreciation for their service: Robert F. Blanks, Denver, Colo., retiring past president; Harmer E. Davis, Berkeley, Calif., retiring director; Harry Delzell, Chicago, Ill., retiring director; N. M. Newmark, Champaign, Ill., retiring director; R. W. Spencer, Los Angeles, Calif., retiring director; and Harvey Whipple, Detroit, Mich., retiring secretary-treasurer.

In his remarks as retiring president under the title *Exciting Adventures*, Mr. Thomson first referred to the healthy condition of the Institute's affairs, with the highest membership and largest budget in its history, and with expenses in the last year well under income. He expressed appreciation to contributors of papers for publication, to active committee members, and especially to collaborators to the special publications such as the *Structural Detailing Manual*. But he also looked forward to future developments in concrete design and construction, which he predicted would bring exciting adventures to the progressives involved.

John V. Maescher, president of Allied Construction Industries, Cincinnati, Ohio, outlined in an interesting vein some of the problems of a contractor in creating in the structure all of the quality and functional features which had been conceived by the designing engineer.

Design and Construction Concurrent sessions on design and construction were held in the afternoon. Henry L. Kennedy, Boston, an architect as well as a manufacturer, was chairman of the discussion of design. J. A. Murlin presented a paper on *Field Practice in Lightweight Concrete* by C. Willson and himself, both of Dallas, Tex. The authors cited flat slab construction with concrete weighing 90 lb. per cu. ft., in which the aggregate was specially-sized burned shale. They emphasized the important saving in steel in a multi-story structure with steel columns when lightweight concrete is used. Other papers on design were presented by Professor H. A. Sawyer Jr., University of Connecticut on *Economy of Concrete Beams*; K. Hajnal-Konyi, consulting engineer from London, England, on *Concepts of Safety*; and Professor James P. Michalos, Iowa State College, on *Analysis of Skewed Rigid Frames*.

The chairman of the session on construction was Robert F. Blanks, Denver, Colo. An interesting moving picture was presented by K. P. Billner, Philadelphia, showing various applications of vacuum concrete in floor construction and in making precast units. An unusual procedure for *Electric Heating of Concrete in Winter Construction* was described by C. Itakura of Hokkaido University, Japan, by which the appli-

cation of energy to three electrodes in the amount of 30 kw.-hr. per cubic meter prevented freezing of concrete in air at 0 to 10 deg. F.

C. O. Christenson, National Association of Home Builders, Washington, D. C., spoke on *Small Building Construction*. He cited the scattered use of precast methods in this field, mentioning as typical a housing project at present under way at Great Lakes Naval Training Station, Ill., and predicted wider application of precast units in house construction. A paper on *Insulation for the Protection of New Concrete in Winter* by Messrs. Tuthill, Glover, Spencer, and Pierce, all of the Bureau of Reclamation, and presented by Mr. Tuthill, reviewed the observations on Reclamation construction of the protective value of insulation in forms during mild freezing. These observations prompted revision of specifications by reducing the time of protection, so that contractors have used insulation for pours in the late fall, thereby permitting work later in the season than previously. The session closed with a movie of the *Centerline Process of Pipe Lining*, in which cement mortar is spread by machine on the inside of a cast-iron, steel, or ceramic pipeline.

Research The annual open session on research was held on Thursday morning, with Professor S. J. Chamberlin, Iowa State College, chairman of the Institute's committee on research, presiding, assisted by Professor George W. Washa, University of Wisconsin, secretary of the committee. Brief reports were presented on the progress of ten research projects at as many laboratories, both public and private, which had been selected from the large number of researches on concrete reported to the committee. Among the projects reported at this session were accelerated natural weathering tests, correlation between freezing-and-thawing tests and natural exposure, surface treatments and admixes for improving resistance to calcium chloride, high-pressure steam curing, and comparison between ordinary and prestressed concrete beams. The wide scope of current researches was indicated by the reports presented.

Panel Discussion The final session of the convention was devoted to a panel discussion of questions regarding concrete which were drawn by the moderator, Professor H. J. Gilkie, from slips tossed into a hat. The panel comprised eleven experts in various segments of the concrete field. Each question was first submitted to a panel member, and then to others of the panel and to those in the audience who wished to contribute. The following topics were discussed: control of cracks, pressure in forms, strengths of A-305 vs. plain bars, caulking compounds, radiant heating, effect of vibration on entrained air, and uses and abuses of shotcrete. The discussions on some of the topics were lively, and reflected a divergence of opinion. The sustained interest of the audience indicated general approval of this type of informal session.

Canadian Block Assn.

(*From page* 156)

testing agency, but a research agency. The National Building Code was first published in 1941, and a revised code will soon be released.

A brief discussion of modular dimensioning followed Professor Leggett's address, and short talks were given from the floor by certain members, including J. H. Besser, president of the Besser Manufacturing Company, Alpena, Mich., U.S.A.

The Friday program was conducted by W. C. Coupland of Argo Block. Greetings were extended the meeting from Herb Vincent, sales manager of Cinder Block, Inc., Detroit.

Talks on lightweight masonry units and lightweight aggregates were given by Brant Coleman of the J. Cooke Concrete Block Company and J. Pennachetti of the Thorold Concrete Block Company.

A discussion of *Steam Curing and its Problems* by E. Gross of the Thermal Engineering Company, Detroit, Mich., was heard with great interest.

The election of the following officers for the year 1952 was one of the highlights of the convention: president, W. C. Coupland, Cooksville, Ont.; first vice-president, G. F. Fraser, Windsor; second vice-president, J. Pennachetti, Thorold Concrete Block Co., Thorold, Ont.; secretary, W. Kirkpatrick; and treasurer, R. Cooper.

Directors chosen included the following: L. G. DesBrisay, Blakeny Concrete Products Limited, Moncton, N.B.; J. Edwards, L. E. Shaw Limited, Halifax, N. S.; R. A. S. Bruce, Frazer Duntile Limited, Ottawa, Ontario; R. Mayotte, Mayotte Concrete Products, Ltd., Fort William, Ont.; J. F. Boux, Supercrete Limited, St. Boniface, Manitoba; D. Weldon, Weldon's Concrete Products, Saskatoon, Sask.; J. A. Russell, Edmonton Concrete Block Co., Ltd., Edmonton, Alta.; C. McCleery, McCleery & Weston, Ltd., Vancouver, B.C.; B. Coleman, J. Cooke Concrete Blocks Ltd., Aldershot, Ont.; Carson Luke, Paris Dunbrik Co., Paris, Ont.; A. Marker, Gus Marker Concrete Block & Tile, Kingston, Ont.; L. Ryan, Ryan Builders Supplies Ltd., Windsor, Ont.; A. Miron, Miron Frères Limited, Montreal, Que.; P. McPherson, Storrar Dunbrik Co., Ltd., Weston, Ont.; A. B. Williamson, Pressure Pipe, Montreal, Que.; A. D. Wylie, Economy Fuels, Hamilton, Ont. (past president).

The members were guests of the Ryan Builders Supplies plant in Windsor, which they visited on Friday. This plant and the firm's facilities in London are the only block plants in Canada having high-pressure-steam curing.

A program of entertainment was provided for the members and their wives during the convention. The ladies were taken on a tour of Detroit and Windsor and were entertained at a luncheon and a theatre party. A banquet at the "Elmwood", Canada's largest night club, was held on the first evening. On the second night a banquet was given for all in the main ballroom of the Prince Edward Hotel.

The armory, scene of the exhibits, was open each afternoon. Members showed active interest in viewing the exhibits, and discussing their problems and needs with the exhibitors. The show gave promise of becoming standard practice for years when the N.C.M.A. does not hold an exposition in the United States.

At Torrance, Calif., the Carter Construction Company recently began construction of the new $180,000 Madrona Avenue Elementary School, using the tilt-up concrete slab method. By means of this new construction method, big prefabricated slabs weighing from 10 to 16½ tons are set in place on the site by a crane. It was stated that the building will be among the first in this area to be constructed by the tilt-up system.

Recently added to the N.C. Devening Concrete Products Company's line at Garden City, Ind., are prefabricated steps, manufactured under a franchise for seven Indiana counties.

Glen Devening, son of N. C. Devening, has taken over the management of the concrete step business, while his father continues to supervise the firm's block making line.

Block Men Name Al Streblow President At New York Convention of N.C.M.A.

another ON THE SPOT report

By WILLIAM M. AVERY

WELL over 800 members and guests of the National Concrete Masonry Association gathered at the Hotel New Yorker, New York City, on February 18, 19, and 20 for the block industry's 32nd annual convention. An exceptionally well planned and well executed program of business and technical sessions dealt with such timely subject as covered storage and methods of drying masonry units, prestressed structures built of machine-made units, control joints in concrete masonry buildings, high-pressure steam curing, the promotion of soffit block floor units, and warm air radiant heating of concrete masonry floors.

Al Streblow, Basalt Rock Co., Napa, Calif., newly-elected president of N.C.M.A., and Horace W. Bush, Multiplex Concrete Co., East Orange, N. J., retiring president.

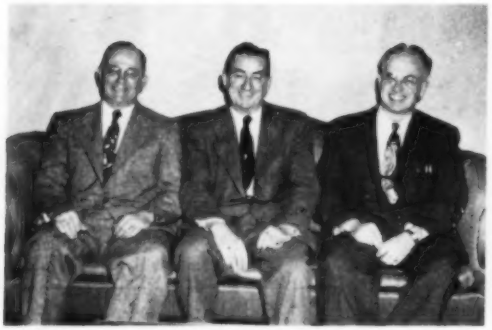
Al Streblow, Basalt Rock Company, Napa, Calif., was the unanimous choice of the Association's board of directors to succeed Horace Bush as president. Mr. Streblow's company several years ago developed a novel and outstandingly successful technique for the assembly of concrete masonry units into structural elements, and his election to the presidency comes at a time when the entire industry is showing interest in the vast market potential of this still relatively unexplored field.

Three new members of the Association's board of directors were also elected during the New York convention. They are W. A. Neff, Neff Concrete Products Company, Danville, Ill.; Earl W. Peterson, Ideal Cement Stone Company, Omaha, Neb.; and Leon K. Camp, Camp Concrete Products Company, Columbus, Ga. The 1952 meeting marked the automatic retirement of Otto Buehner, Salt Lake City, Utah, and Cloyd Fellabaum, Toledo, Ohio, as members of the Association's board of directors. Elected as vice-presidents were Herbert F. Geist, The Geist Coal & Supply Co.; Sam Paturzo, V. Paturzo Brothers & Son, Inc.; and Lewis Lloyd, Alatex Construction Service.

Another important development was the board's decision to increase the Association's staff in order to expedite the flow of information between various bureaus of the government and member companies.

President's Address Horace W. Bush, retiring president of the Association, presided at the opening session and also presented the opening address of the convention. Referring to what he called the concrete masonry industry's golden opportunity in the years ahead, Mr. Bush pointed out that housing construction and expanded building of commercial and institutional structures in the future would furnish a far larger market for the industry's products than it has ever known. He expressed the opinion that one factor alone — population growth — will assure housing construction at an extremely high rate. Mr. Bush feels that for some time to come housing units will in all probability be built at the rate of not less than 1,000,000 units per year.

Because of the country's tremendous productive potential, Mr. Bush believes that within a relatively short time enough materials will be available to permit industrial, commercial, and institutional building to go forward at a high rate despite the tremendous demands of the defense program. In the year to come he believes that the block industry should do everything in its power to solidify the important gains scored in recent years. One certain method, he said, to assure a con-



LEFT: The three new directors of the Association elected at the New York meeting are W. A. Neff, Neff Concrete Products Co., Danville, Ill.; Leon K. Camp, Camp Concrete Products Co., Columbus, Ga.; and Earl W. Peterson, Ideal Cement Stone Co., Omaha, Nebr. RIGHT: John Buehner, Buehner Block Co., Salt Lake City, Utah; Alfred D. Russo and Fred Paolella, both of Plasticrete Corp., Hamden, Conn.; and Clarence Buehner, Buehner Block Co.

Study new markets, technical problems at three-day meeting

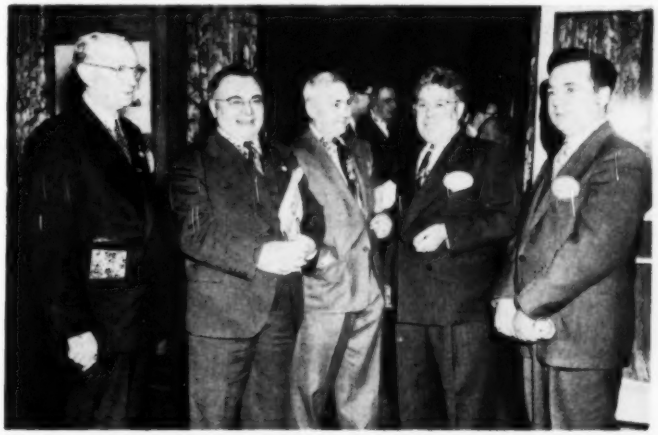
tinued high demand for the industry's product is constantly to improve quality in every possible way. He said that improvement in plant productive facilities and management must also go forward, and that every possible effort must be made to do things better, faster, at less expense, and with less man-power. Our lasting prosperity, Mr. Bush said, is dependent on our preparing for tomorrow today.

In closing, Mr. Bush expressed an eloquent plea for the industry to lend full support to its national association. In the years ahead he believes that co-operation between government and industry will become an increasingly important problem, and he feels that such co-operation can best be achieved through the medium of a strong national association.

Copeland's Report In his opening remarks R. E. Copeland, director of engineering of the Association, quoted this publication's survey of 1951 production in the block industry by way of indicating that the year just closed had been a prosperous one. It was also, Mr. Copeland said, an unusual year in several ways, and he referred to the irony of finding ourselves, within six years of VJ day, again operating under government controls.

Pointing out that the defense program creates a heavy demand for all types of building materials, including concrete masonry units, Mr. Copeland told briefly of the Association's active work during the last year in providing the Corps of Engineers with information which ultimately enabled that bureau of the government to approve block as a basic wall material. Among the factors which favored the acceptance of block, the speaker said, was the block industry's large and readily expandable productive capacity. It was possible to meet such objections as were raised to the product on technical grounds by means of the co-operative efforts of the National Concrete Masonry Association and the Portland Cement Association. Extensive studies were made of structures all over the country, and engineers of both organizations helped in the development of construction details and specifications which would reduce the cracking problem to the minimum.

Mr. Copeland referred to the



Left to right: Raymond A. Propert, Oswalt Engineering Service, Forest Park, Ill.; Gustave Paul, Gustave Paul, Inc., Farrell, Pa.; Alfred Neubeiser, Illinois Brick Co., Chicago; and George Oswalt and Sam H. Oswalt, both of the Oswalt Engineering Service.

32nd annual convention banquet of the National Concrete Masonry Association, Hotel New Yorker, February 19.

Carl Menzel, Portland Cement Association, Chicago, one of the speakers on the program, and Frank G. Erskine, P.C.A., Washington, D. C.

new 30 percent moisture limitation of the Corps of Engineers, and pointed out that the Association had proposed a graduated moisture requirement which would take account of the important factor of climatic conditions. The scale proposed would have allowed 40 percent with 75 percent relative humidity, 30 percent with 50 percent humidity, and similar variations. Although the Corps of Engineers did not adopt this particular recommendation, in almost all other respects, Mr. Copeland said, the Association's suggestions were accepted without change.

Mr. Copeland believes that the block industry has a strong position today because it acted promptly in providing technical assistance to the Corps of Engineers when it was required. He stated that the military construction program means a great deal to the block industry, and he urged that all producers fully comply with Corps of Engineers requirements. He pointed out that present standards are covered in the association's bulletin number 194.

The speaker briefly reviewed various other activities of the Association along technical lines. He mentioned studies of the effect of mixer speed and mixing time as one of the projects now in progress. Among other current projects mentioned were the development of structural details for special uses of concrete masonry units, and an analysis of the stability of stacked units.

Mr. Copeland expressed disappointment in the participation of N.C.M.A. members in the Association's accident prevention program. Although only 15 percent of the membership has participated to date, Mr. Copeland called attention to the fact that both frequency and severity rates in the industry have improved materially since the program was launched. He expressed the hope that there would be wider participation and interest in the future.

Mr. Copeland referred briefly to certain claims made in some of the trade journals regarding systems of curing which require very short cycles. He stated that to his knowledge all such claims are unsupported by either factual data or common sense, and he believes that there is no validity to claims that special boilers or methods of introducing steam can have a material effect upon the length of curing cycles. In Mr. Copeland's opinion, 12 hours of steaming is still a minimum requirement for the production of well cured masonry units.

Markert's Report According to W. P. Markert, the Association's director of promotion, the second-largest item on the organization's current budget is devoted to publications and publicity. He mentioned this by way of showing the importance which the Association attaches to its work in the field of promotion. In the coming year, said Mr. Markert, it is planned to continue publication of the N.C.M.A. *Reporter*, and he expressed the hope that members will make more contributions than they have in the past. Referring to the Association's various bulletins on construction with concrete masonry units, Mr. Markert disclosed that the church construction bulletin has already been circulated to 16,000 architects, general contractors, and church boards. The school construction bulletin, which came out somewhat later, has had a circulation of 20,500 copies; and the bulletin on residential construction has gone out to over 12,000 individuals and concerns. In addition, Mr. Markert said, some 40,000 copies of the Association's two home booklets (*Homes of Distinction* and *Concrete Masonry Homes of Today and Tomorrow*) have been mailed out.

Morgan R. Butler, Butler Bin Co., Waukesha, Wis., and George F. Doscher, The Granulite Co., Chicago.

E. W. Dienhart, executive secretary, N.C.M.A., and Edward J. Brunenkant Jr., Building Materials Branch, Office of Price Stabilization, Washington, D. C.

As a result of an advertisement which the Association has placed in *Small Homes Guide*, Mr. Markert said, some 1,500 inquiries have already been received, and the flow has by no means stopped. Because of this favorable experience it is planned to do more of this type of advertising in the forthcoming year. Mr. Markert also referred briefly to the visual aids slides which the Association has prepared for the use of architectural students. This program was initiated with a set of 15 slides, and it is hoped that more will be provided during the current year.

In a short time Mr. Markert hopes to be able to mail a fourth booklet in the series on the use of concrete masonry units, this one dealing with basement construction. Other projects in the offing include a bulletin on the use of concrete masonry in the various types of floor systems, and an investigation of radiant heating using the cores of masonry units as duct work. Another booklet in the planning stages will show 60 outstanding concrete masonry unit jobs. Mr. Markert asked all members to bear in mind the urgent need for stories and photographs on outstanding concrete masonry jobs, and he urged his audience to send in such material whenever it is available in order that his office can farm it out to shelter and architectural magazines. He mentioned that the Association will have an exhibit at the forthcoming convention of the Mason Contractors Association of America in Chicago. As part of its participation in this important gathering, the Associa-

Sam Paturzo, V. Paturzo Brothers & Son, Inc., Baltimore, Md., and W. Shaw Phillips, Arthur Rehberger & Son, Inc., Newark, N. J.

tion plans to take a party of mason contractors through the newly modernized general offices of the Portland Cement Association in order to provide a convincing demonstration of what constitutes good masonry work with block.

Dienhart's Report E. W. Dienhart, executive secretary of N. C. M. A., reported that, as of January 1, the Association had 583 members. He contrasted this figure with the 118 members who some years ago formed the organization on its present basis. Despite the considerable gain, Mr. Dienhart feels that the showing is not nearly good enough and that every effort should be made to win wider participation. During 1951, Mr. Dienhart said, 82 new members, 16 associate members and 8 contributing members were added to the roster of the Association. A larger membership would inevitably mean a broader program, since it would provide a broader basis upon which to finance the many important activities expected of a national association. Members themselves, Mr. Dienhart said, should be the primary source of new membership.

Mr. Dienhart paid tribute to the work of the Association's board of directors, and he called attention to the fact that their attendance at all meetings is entirely at their own expense. He also referred to the great patience and thoroughness of retiring president Horace Bush.

In describing the broad services which the Association stands ever ready to render to its members, Mr. Dienhart referred to an incident involving a member company in New Jersey which wrote to the Association complaining about the apparent loss of cement in bulk shipments. In order to find out how wide-spread this problem might be, a questionnaire was mailed out to various member companies and a fine response was obtained. A few more than half of the replies indicated the invoice weight of bulk cement does at times exceed the actual weight, but the difference, according to the tabulated data, was found to average not more than two or three percent. Mr Dienhart believes from the information supplied by member companies that the wrong tare is the most frequent source of trouble in this connection although dirty cars and inaccurate scales may also be contributing factors. He advised block producers who feel that they have been paying for more cement than they receive first to make a thorough check of cars. If the tare weight is found to be in error by more than the allowable 300 pounds, recovery can be made from both the cement company and the carrier.

Price Stabilization The workings of price stabilization and how they affect the concrete products industry were described by Edward J. Brunenkant Jr. of the Building Materials Branch of the Industrial Materials and Manufactured Goods Division of OPS. He said that although all manufacturers of concrete masonry units are covered by CPR 22, those manufacturers who had gross sales of $250,000 or less in the last fiscal year can elect to price under the general selling price regulation. This, he reminded his audience, was the first order issued by the Office of Price Stabilization, freezing the prices of all commodities and services at the highest level charged by the seller during the period of December 19, 1950, to January 25, 1951.

As of December 19, 1951, Mr. Brunenkant said, all manufacturers of concrete products were legally required to put CPR 22 selling into effect. Firms that were eligible to take the $250,000 option, but which did not elect to price under the general selling regulation, also had to put CPR 22 selling into effect on

Two visitors from "down under"—G. E. Melocco and John Melocco of Melocco Bros. Pty., Ltd., Sydney, Australia.

Al Bothan and Grant N. Reinhold, both of Anchor Concrete Products, Inc., Buffalo, N. Y.

Representing Neff Concrete Products Co., Danville, Ill., were (left to right): Pete Neff, W. A. Neff, F. J. Stephan, and J. E. Neff.

that date. He stated that CPR 22 was issued in April of 1951 and was designed to serve as a bridge between the price structure frozen by the general selling price regulation and that which ultimately would be established through tailored regulations for specific industries. As he explained it, under CPR 22 a manufacturer of concrete masonry units is permitted to calculate increases in direct material and labor costs up to March 15, 1951, and to add these increases to pre-Korea selling prices.

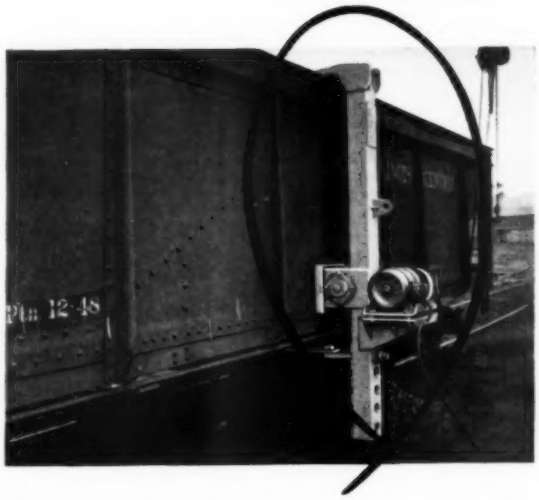
The speaker said that since last April approximately 1,500 concrete products firms have filed Public Form No. 8 as required by the reporting provisions of CPR 22. Since many of these forms were received by OPS around December 19, a considerable number have still not been completely processed. He stated that those firms which filed correctly will, in all probability, never hear from OPS. There are four sections of CPR 22, according to Mr. Brunenkant, which deal with the establishment of selling prices of new products introduced after June 24, 1950. Under section 32, for example, the selling price is determined by applying the mark-up of a comparison commodity to the present cost of the unit being priced. He said that a good example of the use of this section would be a firm pricing a new lightweight block on the basis of the mark-up of the same size of standard lightweight block. Section 33 provides that the selling price of the new commodity shall be the same as the ceiling price of the most closely competitive seller marketing the same or a closely similar commodity.

Section 4 of CPR 22 is reserved for those sellers who are unable to determine selling prices under any other section of the regulation. Under the provisions of this section, OPS will establish the ceiling price upon compliance with the reporting requirements. The speaker noted that the seller must use the first one of the four sections which is available to him. That is, before a seller can use section 33 he must be unable to use section 32.

Mr. Brunenkant pointed out that an understanding of the pricing provisions of CPR 22 is absolutely essential if a firm is interested in taking advantage of any adjustments permitted by the Capehart Amendment. There are, he said, two supplementary regulations to CPR 22 under which a manufacturer of concrete masonry units may

(*Continued on page* 168)

Can YOU Afford to be without a National Car Shaker?



Greatest Aid To Unloading Hopper Cars Ever Developed

Wheel Cart

Mono Rail

Jib Crane

Pat. Pending

Economical and speedy unloading with a minimum of manpower! The National Car Shaker is the only low-priced equipment of its kind. Pays for itself in increased profits.

Saves up to 80% in unloading costs. Sand, stone, coal, coke, gravel, aggregates and all bulk materials can be quickly and safely unloaded by ONE man. Releases manpower to more important jobs. And this one man can unload a hopper car in as little as 6 minutes. The National Car Shaker can be handled by one of three different methods. Fits into almost any set-up.

Write Today for the *free folder* which gives you complete information.

National Conveyor & Supply Company

348 N. HARDING AVENUE • CHICAGO 24, ILLINOIS

Waylite Company Unveils New Plant At Bethlehem for N.C.M.A. Officials

Inspection party sees modern high-production facilities for making lightweight slag

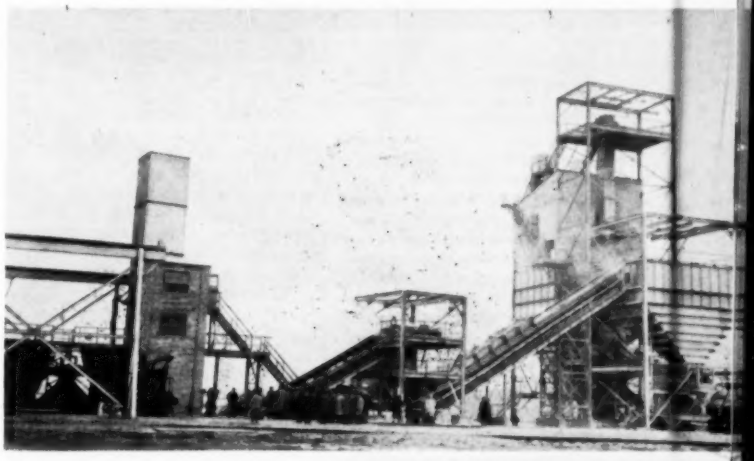
another ON THE SPOT report

Officers and directors of the National Concrete Masonry Association, and representatives of the technical press were the guests of the Waylite Company on February 21 for the purpose of inspecting what is believed to be the world's largest slag converter. Timed to coincide with the closing of the annual N.C.M.A. convention in New York, the inspection trip attracted more than 50 invited guests, as well as personnel of the host organization and officers of the Bethlehem Steel Company, whose blast furnaces at Bethlehem, Pa., supply the molten slag used in the new expanding plant. The group was also conducted on a tour of the Bethlehem Steel Co. plant by J. M. Sylvester, general manager.

By WILLIAM M. AVERY

The new plant, first operated in January of this year, will increase Waylite's capacity at Bethlehem by about 400,000 cu. yd. annually, and will materially bolster the company's claim to being the world's largest producer of lightweight aggregate. A similar plant, having a capacity of approximately 350,000 cu. yd. annually, was built at Bethlehem about two years ago to replace facilities which the company had operated there for a number of years. Thus, with two modern, fully mechanized plants having a combined capacity of 750,000 cu. yd., Bethlehem is now by a considerable margin the largest in Waylite's network of slag-processing operations. The two plants are essentially identical except for certain refinements in the newer unit which made possible an increase of about 20 percent in output.

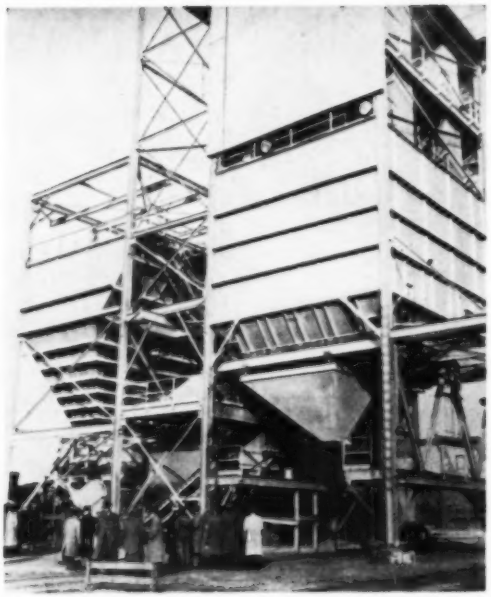
The plants are located on level ground adjacent to the slag dump, about five miles distant from the steel plant's huge blast furnaces. The molten slag is poured at the furnaces into cast-steel ladles which hold about 400 cu. ft. of the material, and these are moved by rail to the processing units. The following



• Above: A general view of the Waylite Company's No. 2 plant, which began operations at Bethlehem, Pa., in January of this year. The ladles are poured from their position at the extreme left of the picture, while the primary flow of material is from left to right.

• Left: Walter W. Warren, Waylite vice-president, used a portable P. A. system to describe the plant to members of the visiting party.

• At the dinner party which climaxed the inspection tour, Paul M. Woodworth, vice-president in charge of research for Waylite, and A. Streblow, newly-elected president of the National Concrete Masonry Association, were photographed in front of a large reproduction of a recent Waylite ad congratulating the concrete masonry industry on its fifth successive billion-plus year.



● A view of the new crushing and screening plant. The bin at the left is for storing crude slag ahead of the primary crusher. The partitioned bin at the right is for storage of finished materials.

process description applies to the newer of the two plants.

The two ladles which comprise each truck are poured simultaneously, and at a carefully controlled rate, into the Brosius slag granulator which is the heart of the dry granulating process. Water is added at pipe temperature as the slag is poured; and the steam generated by contact with the molten material (temperatures range from 2,000 to 2,500 deg. F.), in combination with the whipping action of the high-speed rotors in the upper portion of the granulator, cause the formation of fully-sealed bubbles or cells. The material drops through the open-bottom portion of the Brosius machine onto the first of two 5-ft. wide by 90-ft. long inclined pan conveyors. Gradual cooling, or annealing, takes place on these conveyors, and as the expanded material drops from the first to the second flight, finger-type breakers reduce the chunks to 6- or 8-in. maximum size.

The second conveyor discharges into a steel bin of about 400-cu. yd. capacity, where the expanded material is held until the temperature drops to about 400 deg. F. A short length of pan conveyor feeds material from the crude bin into a Gruendler 30- by 40-in. double-roll crusher for primary reduction. The discharge of the primary crusher is elevated and passed over the first of several 4- by 12-ft triple-deck vibrating screens. This screen, equipped to scalp at $\frac{7}{16}$-in., operates in closed circuit with a 24- by 30-in. double-roll crusher for secondary reduction, and there is also an identical crushing unit in the circuit for fine reduction.

The crushing and screening plant is equipped to process 2,000 cu. yd. of material per day on a three-shift basis. Three primary sizes are produced—a coarse grade, ranging from $\frac{7}{16}$ to $\frac{3}{16}$ in., a fine grade ranging from $\frac{3}{32}$ in. to dust, and an acoustical grade ranging from $\frac{3}{16}$ to $\frac{3}{32}$ in. The finished sizes are stored and shipped separately to prevent segregation. The storage bins are equipped with motorized larry-type hoppers which deliver the material into trucks for stockpiling or delivering, or into open-type cars located on either of two rail sidings.

Due to the complete mechanization of all phases of the operation, each of the plants at Bethlehem requires only a five-man crew per shift, plus a small maintenance crew which serves both plants on the day shift. About 90 percent of total output goes to plants manufacturing concrete masonry units. Yield is said to be about 50 units per cu. yd. of Waylite. The average weight of an 8- by 8- by 16-in. Waylite masonry unit is about 30 lb., as compared with an average weight of around 45 lb. for comparable sand-and-gravel units.

Waylite was first manufactured at South Chicago, Ill., in 1932 from slag produced by the Youngstown Sheet & Tube Co. This original plant, which has produced well over a million cu. yd. of material in the last ten years, is still in operation. There is a second production unit at South Chicago, in addition to plants at Indiana Harbor, Ind., and Swedeland, Pa. In 1950 and '51 the company's plants produced approximately 1,700,000 cu. yd. of expanded slag, and with the new facilities at Bethlehem the annual output of all plants is expected to total around 1,200,000 cu. yd.

The N.C.M.A. inspection party traveled from New York City to Bethlehem by chartered bus. Members of the group were guests of the Waylite Co. at a luncheon in the Bethlehem Club, as well as at a dinner held at the Saucon Valley Country Club near Bethlehem. Hosts for Waylite were E. A. Howard, president, and W. F. Potts, Walter W. Warren, and Paul M. Woodworth, vice-presidents of the company.

N.C.M.A. Convention

(*From page* 166)

apply for the Capehart adjustments; but before filing under either of these regulations it is necessary to have filed a Form 8. He said that with minor modifications both supplementary regulations use the adjustment procedures outlined in CPR 22. One of these regulations, Mr. Brunenkant stated, permits an adjustment for increases in overhead costs. In both supplementary regulations the cut-off date for calculating increases in labor and material costs has been extended from March 15, 1951, to July 26, 1951.

Any manufacturer of concrete masonry units, Mr. Brunenkant said, may apply under SR 17, the first of the two supplementary regulations. Applications under SR 18 are limited to firms with net sales of $1,000,000 or less, and whose net sales in the first 6 months of 1951 were not more than 15 percent of the net sales for the same period in 1950. He also called attention to the fact that applications under either supplementary regulation must cover all commodities subject to CPR 22. It is, he added, permissible to file for Capehart adjustments at any time, and the adjusted prices may be put into effect immediately upon return of the postal receipt.

It is fairly clear, Mr. Brunenkant said, that CPR 22 and its Capehart supplements are not particularly adaptable to pricing problems of the concrete block industry. After discussing this problem with representatives of the industry the Building Materials Branch decided that the most practical method of establising selling prices for concrete block would be on an area basis. For this

(*Continued on page* 179)

New Sakrete Plant Supplies Eastern And New England States

By WALTER E. TRAUFFER

• A general view of the Campbell Dry Mix, Inc., plant at Farmington, Conn., showing the ramp for aggregate trucks. The old buildings at the right are used for packing, storage, and offices.

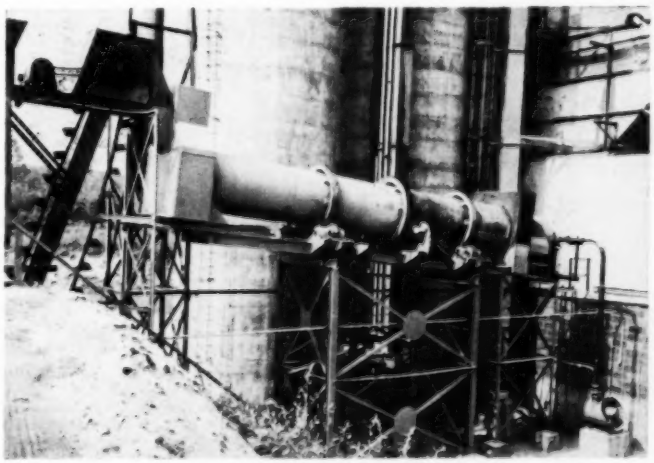
another ON THE SPOT report

THE Harry T. Campbell Sons' Corporation, which has the franchise for producing and selling Sakrete bagged dry-mixed concrete and mortar in the 13 Eastern and New England states, had for some years been trying to supply the New England states from its three plants in Baltimore, Md. Shipments were made in freight carload lots which were too large for most customers; so they were first unloaded to a warehouse, from which various sized lots were delivered to customers of the company's dealers. This system had many disadvantages and complications, and the demand continued to grow so rapidly in this area that additional producing capacity was necessary. Rather than to expand the Baltimore plant further it was decided to build a plant in New England, 2½ miles south of Farmington, Conn. This went into operation on July 1, 1951, and serves all of New England and New York state. With its present equipment, this plant has a capacity of about 50,000 90-lb. bags monthly, and provision has been made for a second unit when this becomes necessary. It is operated under the name of Campbell Dry Mix, Inc.

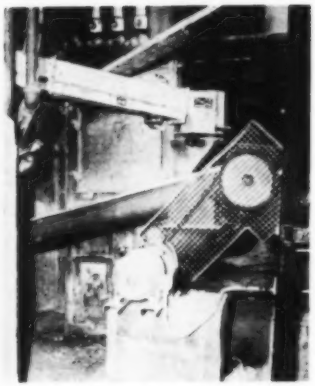
Most shipments are now made from this plant by leased trucks direct to the customers of various dealers. Billing is done directly through the dealers, with hauling charges based on the zone into which the delivery is made. The zones are divided roughly by mileage up to 200 miles. Shipments over 200 miles are made by freight. The dealers can if desired still deliver any orders under 1 ton in zones 1 and 2 (up to 75 miles) and any under 3 tons in zones 3 and 4 (up to 160 miles). At present five Ford F8 tractor-trailers are used, one a 20-ton tandem and the other four 15-ton single-axle units. With this system the cost to the customer is lower, and deliveries to dealers can be made once a week, much oftener than before. Another result has been a rapid increase in demand in this area.

The four standard Sakrete products are being made in this plant: concrete mix, used for patching concrete, for small footings, etc., which is packed in 45- and 90-lb. bags; sand mix, in 11-, 25-, 45- and 80-lb. bags, which is used for plastering, patching, pointing, etc.; Water Tite, a waterproofed cement grout; and Mortar Mix, for laying brick, block, stone, tile, etc.; the latter two are packed in 45- and 80-lb. bags. The concrete mix is designed for a strength of 4,000 p.s.i. in 28 days and the sand mix for 5,000 p.s.i.

The plant itself is new, but the main storage building was once a cement brick plant and later a drop forge plant. This building was rehabilitated for storage and packing, and new structures were built for the other departments. Sand-and-gravel aggregates are brought in by truck from a plant ¼ mile distant. The trucks back up a ramp to discharge into a 24-ton steel hopper. Two types of sand are used—A, fine, and B, coarse—and these are brought in



• The rotary aggregate drier, with the elevator from the truck hopper (left). Cement silos and aggregate bins are in the background.



• Left: The inclined screw conveyor which brings cement from the cars to the elevator. Above are the air conveyors for reclaiming cement from the silos.

• Right: The aggregate elevator is at the right; the cement elevator at the left, with its air conveyors to the silos and bins.

separately; the gravel can be processed with either one, or separately.

From the hopper these materials go *via* a belt feeder and an inclined chain bucket elevator to a 42-in. by 25-ft. rotary drier. Like most of the other equipment in the plant, the elevator and drier are driven through Falk speed reducers. The drier is fired through a Hauck burner with No. 2 fuel oil which is stored in a 10,000-gal. tank. The temperature used varies with the wetness of the material, and capacity is about 10 t.p.h. A Latimer bucket elevator feeds the dried aggregates to a Tyler Hum-mer single-deck screen with 5/32-in. cloth which separates sand from the gravel. The products are chuted into three of the five compartments of a Blaw-Knox steel bin, one each for the fine sand, coarse sand, and gravel.

Portland and mortar cements are received in bulk hopper cars on a siding and discharge *via* a track screw to a Latimer bucket elevator. Spouts feed to a pair of 6-ft. long Fuller-Huron Airslides, which discharge the cement into two 1000-bbl. reinforced concrete storage silos, or to a 26-ft. 8-in. Airslide. The latter discharges into the two other compartments of the Blaw-Knox plant-feed bin, each of which has a capacity of 300 bbl. Fuller-Huron Airfeeders feed from the silos through 4-ft. Airslides back to the same cement elevator. Air for the Airslides and Airfeeders is supplied by two Roots-Connersville blowers, one at ground level and a smaller one on top of the plant. The latter is also connected by ducts to collect dust in the scale room, at the bagger, etc. Flow valves and pipes at the bottom of the silos are used to control the recovery Airslides and the speed of discharge to the elevator. Each silo has an air release at the top.

Each cement bin compartment is equipped with Bindicators which automatically control the feed of cement into it. Signal lights are located in the yard and at the bagger. The feeding of these materials to the batching system, the batching, and the feed to the one-bag packer are all automatically controlled. Four-ply bags with two water-resistant plies are used in 11-, 45-, 80- and 90-lb. sizes. Avril "Twin-Tilt" hand trucks are used to handle the filled bags to the 25,000-bag storage or to cars or trucks for shipment. Wooden pallets are used which are removed when loading cars and returned in the case of truck shipments.

Sakrete has been widely publicized, in these pages and through advertising by its various manufacturers; therefore only a brief summary of its history will be given. It was developed by Arthur C. Avril in 1934. He was then operating a concrete central-mixing plant in Cincinnati (see PIT AND QUARRY, April 10, 1929, pp. 51-54) and found that there were many small users of concrete who could not be supplied because they required quantities less than ½ cu. yd. Sakrete was designed to meet their needs; and after two years of experimentation the original plant for its production went into operation in Cincinnati in July, 1936. (See PIT AND QUARRY, March, 1938, pp. 73-74 for a complete description.) Patents were issued in 1939 on this method of proportioning materials for each sack individually, and this is still the basic principle used, although many improvements have been made in the equipment, methods, and product.

• The bagging and sewing machine. Special tilt trucks are used to handle the bags to trucks or cars.

Serious efforts to expand the production of Sakrete by licensing producers throughout the country were delayed by World War II, but after the war these efforts were renewed with great success. Plants are now operated in Maryland, North Carolina, Los Angeles, El Paso, and Franklin Park, Ill., and others are under negotiation. The Franklin Park plant was built in 1948 (see PIT AND QUARRY, February, 1949, for a complete description), as was also Mr. Avril's new plant in Cincinnati.

The new Campbell Dry Mix plant, as has been stated, sells most of its output through dealers, but it also employs four salesmen who cooperate with them. They are backed by local advertising which is a part of the program of the parent corporation. This includes an original daily 15-minute television skit in the larger cities, newspaper advertising in co-operation with the dealers, classified telephone book listings, etc.

Henry De Fries is manager of the new plant, and Winton G. Ramsay is his assistant. Albert S. Cummins is manager of the Sakrete and Calcite Department of the Harry T. Campbell Sons' Corp.

American Concrete Pipe Association Holds 44th Convention at Chicago

E. H. Fox (left), outgoing president of A.C.P.A., receiving a plaque from the new president, Ivy H. Smith, in appreciation of the service rendered during his term of office.

another ON THE SPOT report

THE combined 44th annual convention of the American Concrete Pipe Association and the 3rd annual convention of the American Concrete Pressure Pipe Association, held February 27-29, 1952, at the Drake Hotel, Chicago, drew an excellent attendance but did not reach last year's record. Those attending were treated to an interesting and informative series of addresses and reports, "jam" sessions at which industry, technical and operating problems were discussed from the floor, and the usual high-grade entertainment for which these meetings have become famous. Included in the program also was a condensation of the "Short Course School of Instruction" held recently at the Drake Hotel, which was reported in full in the January, 1952, issue of THE CONCRETE MANUFACTURER, pp. 243-4, 251.

Many important decisions were made at this meeting with respect to the future policies and activities of these associations. Perhaps the most important of these was the A.C.P.A.'s decision to open a Washington office on a two-year basis to do for the industry what its competitors are doing. There was also much discussion of proposed A.S.T.M. specification changes.

English Visitor An unexpected treat for those present was a short address by Fred Cornelius, inventor of the Cornelius Joint, a member of the firm of Stanton Iron Works, Nottingham, England, one of the largest concrete pipe producers in Europe, and chairman of the Cast Stone & Concrete Federation of Great Britain. Mr. Cornelius traced the history of his company, which had made cast pipe for many years before it began to make spun pipe in 1921. After long tests, a rubber seal ring was developed, and later the manufacture of concrete-lined cast-iron pipe was begun.

The concrete products industry in England has its own research laboratory in connection with the Cement & Concrete Institute. According to Mr. Cornelius, the industry has used steam curing for over 30 years, but high-pressure steam curing is little used as yet. He described the many other types of products made by his company, some of them by spinning and pre-stressing. During World War II these included thousands of tons of air-raid shelters and thousands of concrete bombs. In closing, Mr. Cornelius said that one of the reasons for his visit was to see equipment manufacturers regarding a new pipe plant in England to make high-pressure concrete water pipe in order to conserve steel.

Election of Officers The new president of the American Concrete Pipe Assn. is Ivy H. Smith (Sherman Concrete Pipe Co. of Florida, Jacksonville, Fla.). The new vice-president is James Carnwath (Concrete Pipe Ltd., Toronto, Ontario). Re-elected as vice-presidents were Hugh P. Ford (Eugene Concrete Pipe & Products Co., Eugene, Ore.) and Elmer Leuliette (Universal Concrete Pipe Co., New York). The new secretary is D. A. Decker (Mid-West Concrete Pipe Co., Chicago), and J. D. Mollendorf (Continental Concrete Pipe Co., Chicago) was re-elected treasurer. The following new directors were elected to serve through 1954: L. F. Dolch (Dolch Concrete Pipe Co., Dallas, Tex.), L. S. Stroud (Stroud-Seabrook, Inc., Bakersfield, Cal.), and E. H. Fox (Cincinnati Concrete Pipe Co., Cincinnati). A plaque was presented to Mr. Fox, outgoing president, in appreciation of the outstanding work he had done during his two-year term.

P. R. Hirsh (left), re-elected president of the American Concrete Pressure Pipe Association, and Fred Cornelius, honored guest from England.

The American Concrete Pressure Pipe Assn. re-elected its entire slate of officers including: President P. R. Hirsh (Lock Joint Pipe Co., East Orange, N. J.), Vice-president R. V. Edwards (American Pipe & Construction Co., Los Angeles), and Harry S. Price Jr., secretary and treasurer (Price Bros. Co., Dayton, Ohio). Re-elected as directors, in addition to the above, were Ray A. Foley (Gifford-Hill American, Inc., Dallas, Texas), and E. L. Johnson (Concrete Conduit Co., Colton, Calif.).

President's Report In his formal report to the members President E. H. Fox pointed out that few trade organizations can claim as long and as rich a history as the American Concrete Pipe Association. He reminded his listeners that the Association is

American Concrete Pressure Pipe Association Also Convenes For Third Meeting

a democratic organization in every sense, and that every member has the right to take an active part in its operation.

During the last year, Mr. Fox said, the industry's normal work has been pushed further and further into the background by emergency defense projects. For this reason it became necessary to establish with NPA the essential nature of the work being done in order to obtain required quantities of reinforcing steel. Because it succeeded in establishing that concrete pipe was not in the same category as door knobs, the industry came through 1951 with an outstanding record of service to the defense program. It was, according to Mr. Fox, the first industry in the country to advise NPA regarding its full requirements of all critical materials. This considerable task was initiated and carried out by the Association.

The board of directors, A.C.P.A.—1952. Front center: Ivy H. Smith, Sherman Concrete Pipe Co., Jacksonville, Fla., president. Clockwise from President Smith: Howard F. Peckworth, managing director, American Concrete Pipe Assn.; Joseph A. Dunn, Hume Pipe of New England, Inc., Swampscott, Mass., director; Thomas E. Arp, Sherman Concrete Pipe Co., Inc., Knoxville, Tenn., director; Elmer Leuliette, Universal Concrete Pipe Co., New York, vice-president; Claude J. Kelley, New Orleans Cement Products Co., New Orleans, La., director; James Carnwath, Concrete Pipe Limited, Toronto, Ont., Canada, vice-president; Louis F. Dolch, Dolch Concrete Pipe Co., Dallas, Tex., director; Harry W. Heath, Lock Joint Pipe Co., East Orange, N. Y., director; J. D. Mollendorf, Continental Concrete Pipe Co., Chicago, Ill., treasurer; Edwin H. Fox, Cincinnati Concrete Pipe Co., Reading, Ohio, director; Earl Eby, Elk River Concrete Products Co. of Montana, Helena, Mont., director; Hugh P. Ford, Eugene Concrete Pipe & Products Co., Eugene, Oreg., vice-president; Gilbert D. Williamson, Valley Concrete Pipe & Products Co., Inc., Yuba City, Calif., director; David A. Decker, Mid-West Concrete Pipe Co., Chicago, Ill., secretary.

Clockwise, center front: Mr. and Mrs. Delmar G. Runner, NPA, Washington, D. C.; Arthur F. North, NPA, Washington, D. C.; Mrs. E. H. Fox; Ivy H. Smith, Sherman Concrete Pipe Co., Jacksonville, Fla. (new A.C.P.A. president); Mrs. Arthur F. North; Edwin H. Fox, Cincinnati Concrete Pipe Co., Reading, Ohio (ex-president); Mr. and Mrs. Louis Dolch, Dolch Concrete Pipe Co., Dallas, Tex.; and Dr. James H. Pearce.

Peckworth's Report Howard Peckworth, managing director of A.C.P.A., referred to 1951 as the pipe industry's peak year, estimating the output of all types and sizes of concrete pipe at about 10,500,000 tons. Actually, Mr. Peckworth said, production during the year probably increased more than the 1,000,000-ton rate which the industry has maintained for the last five years. Recalling his prediction of a year ago that the peak had been passed, the speaker expressed the firm belief that the production curve will level off in 1952.

Mr. Peckworth recounted in some detail the prolonged campaign which the Association's staff carried on in Washington last year to assure that the pipe industry would receive at least enough reinforcing steel to take care of commitments for the defense program. Throughout most of the year, Mr. Peckworth said, he or his assistant spent some part of almost every week in Washington. Although the essentiality of the pipe industry has been established, the speaker pointed out that there can be no assurance that this status will be maintained.

Reviewing some other highlights of A.C.P.A. activities in 1951, Mr. Peckworth stated that during the year the Association produced, and its members purchased, about $50,000 worth of promotional material. He described briefly some of the current publishing activities, and disclosed that plans have been formulated for binding and indexing *Concrete Pipe News* at the end of each year.

Mr. Peckworth said that the first short course, held in Chicago last November, had been an outstanding success, and that the overall response and attendance had far exceeded expectations. The course will be repeated in Chicago this fall, and every effort will be made to profit from the experience gained last year.

Some of the special services which the Association performs for its members were also mentioned. Mr. Peckworth stated that the staff is prepared upon request to have competent engineers study and report on any failure involving a member-company's product; he pointed out also that such studies were often necessary as a means of shielding

the product from blame for failures resulting from improper bedding and backfilling.

In his extensive travels Mr. Peckworth says he finds ample evidence that the pipe industry is constantly improving the quality of its product, and as a result of this trend he believes that poorly-made pipe is gradually being pushed out of the picture. According to Mr. Peckworth, there is still a trend toward larger diameter pipe, but the trend toward longer lengths has probably run its course. Mr. Peckworth believes that concrete pipe producers should expect strong competition from the corrugated steel pipe industry as soon as steel becomes plentiful again.

Research Engineer In his first report to the Association as research engineer, John Hendrickson outlined some of his more important recent activities. Work has continued, he said, on the development of special reinforcement designs for large-diameter pipe which must meet heavy load requirements, and it is planned this year to make sand-bearing tests on these designs in addition to the three-edge tests which have been conducted in the past.

Mr. Hendrickson reported that considerable work was done last year on the preparation of a *Handbook of Highway Culverts*, based on data obtained in the extensive A.C.P.A.-financed investigations at St. Anthony Falls. The new handbook will be published some time this year, and it will, according to Mr. Hendrickson, enable county and state highway engineers to design culverts both rapidly and accurately.

The speaker described in considerable detail a concrete sewer pipe failure which the Association investigated at Fremont, Neb. Although the immediate cause of the failure was undoubtedly the formation of sulphuric acid by hydrogen sulphide gas, Mr. Hendrickson's thorough studies revealed that a number of factors in the design of the sewer were actually responsible for the conditions which eventually caused the failure. Manholes were about 2,000 ft. apart, and were in some cases fitted with gaskets and bolted down so there was virtually no possibility at all of proper ventilation. Very flat slopes were used throughout most of the line, resulting in average velocities well below the minimum which would ordinarily be regarded as permissible under similar conditions. Certain sections of the line at certain times of the day run under head. The area served by the sewer has a high water table, and poor foundation conditions were found to be the rule. Strong industrial sewage enters the line at temperatures up to 100 deg. F. All of these factors, Mr. Hendrickson said, strongly indicate that the failure is attributable to faulty design rather than to faulty materials.

Elmer Leuliette, Universal Concrete Pipe Co., New York, N. Y.; D. H. Hogg, Lock Joint Pipe Co., West Hartford, Conn.; John A. Durgom, Lock Joint Pipe Co., Chicago, Ill.; and Dick Harrison, Lock Joint Pipe Co., Kenilworth, N. J.

Jam Session As usual, the jam session, which has become a popular feature at these conventions, drew a large attendance and so much discussion that it had to be continued in a second half-day session. As stated above, it was decided to open a Washington office. It has also been tentatively decided to form a committee to look into the hydrogen sulphide problem, both as to its elimination and to increasing the resistance of concrete pipe to it.

A.S.T.M. specification changes were the hot subject, however, and nearly all producers present had ideas and expressed them. Few definite decisions resulted, but much deadwood was chopped away, and thinking on the subject was clarified considerably. The interchange of ideas with other producers from all parts of the country was helpful to all and should help to make the resulting specifications applicable and fair to everyone.

Short Course The condensed "Short Course School of Instruction" was given one full day on the program. It repeated most of the 3-day program held

(*Continued on page 175*)

Clockwise from lower left corner: John Porter, Gifford-Hill Pipe Co., Dallas, Tex.; William B. Freeman, Lock Joint Pipe Co., Denver, Colo.; Harry S. Price Jr., Price Brothers Co., Dayton, Ohio; Mrs. P. R. Hirsh; O. H. Miller Jr., Choctaw Inc., Memphis, Tenn.; Mrs. H. S. Price Jr.; O. H. Miller Sr., Choctaw, Inc., Memphis, Tenn.; J. W. Porter, Gifford-Hill Pipe Co., Dallas, Tex.; Mrs. W. B. Freeman; and P. R. Hirsh, Lock Joint Pipe Co., East Orange, N. J.

Pallet Conveyor, Improved Lift-Truck Speed California Block Plant's Output

By HARRY F. UTLEY

ONE of the important producers of concrete masonry units in the Los Angeles area is the California Homes & Materials Company at Duarte. This concern has forged the links of good merchandising, product quality, and modern equipment into a winning combination resulting in sales volume that has increased by leaps and bounds annually since the business was established less than a decade ago.

Two Besser Super Vibrapac machines turn out the product, capacity being in the neighborhood of 10,000 units (8- by 8- by 16-in or equivalents) per 8-hr. day. Enclosed, elevator-equipped bins store the aggregates and bulk cement, while modern weigh-batching, water-measuring, and mixing equipment assure exact control of mix proportions. Both gravel and lightweight units are manufactured, the aggregate for the latter being a red volcanic cinder of high strength in relation to weight. Product identification is the trade-name "Chamco", coined from the initial letters of the company name.

Two interesting developments were observed on a recent call at the plant. These were: (1) an ingenious conveyor system which expedites cubing and pallet handling, and (2) a new type of fork lift-truck which transports the cubed loads with dispatch and the minimum of breakage.

The conveyor system was designed and built by a Chamco affiliate, the Duarte Steel & Equipment Company. Use of this system makes it unnecessary ever to handle a steel pallet at any point in production. In operation, a lift-truck moves a rack carrying 24 pallet-loads of cured block from the steam kilns into a position in the yard at the tail-pulley end of a belt-conveyor.

Here an off-bearer, using an overhead pneumatic finger hoist, lifts the loaded pallet off the rack and onto the feeder at the end of the conveyor. The belt is powered and the speed of travel is regulated by a U. S. Varidrive motor. This spaces the pallets properly along the belt so that the blocks may be picked off the pallets and stacked in cubes on skids according to type and size by workmen stationed on either side of the conveyor. The empty pallets then continue onward toward the Besser machines in the plant, the head end of the belt being inclined for a distance of about 15 ft. The pallets are cleaned by a revolving steel brush (driven by another U. S. Electric motor) and scraped and oiled automatically before being stacked in the pallet receptacle at the rear of the block machines.

After leaving the belt, the pallets transfer to roller conveyors operating on 90-deg. radii for delivery to the machines, a pneumatic-tired wheel at the discharge ends of the roller conveyor accelerating the speed of each pallet as it kicks off.

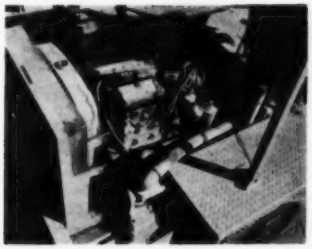
In the Chamco plant, the 36-in. Goodrich "Maxecon" belt operates on 50-ft. centers for convenience, but this length can be shortened or increased as desired by plant requirements or yard layout. The horizontal run of the belt is 29 in. above the paved yard level, which was found to be the most convenient height for the cubers. Tom Simovich, company official, reports that this equipment is being manufactured for other block plants using one or more Besser V3M machines.

The fork lift-trucks, described in some detail in the New Machinery section of this issue, are also now available in sizes up to 10,000-lb. capacity. They are mounted on four pneumatic tires, have high road clearances, and have speeded up handling tasks greatly, according to Mr. Simovich. Besides transporting

Right: Scene at the plant of the California Homes & Materials Co. at Duarte. The conveyor, running from the yard to the block machine in the plant, obviates handling pallets.

Below: After the pallets leave the belt conveyor, they transfer to a roller conveyor which returns them, clean and oiled, to the machines.

Left: The fork lift-truck handles full bundles of reinforcing steel with ease.



Above: Looking down on the motor and the hydraulic pump on the lift-truck, showing ease of accessibility to the working parts.

the racks and the skidloads of cubed blocks and loading the flatbed delivery trucks, the lift-trucks can pick up and load out full bundles of reinforcing steel.

In southern California the sale and delivery of steel is an important and necessary adjunct of the concrete-block business, since building codes require reinforced vertical columns in all wall construction as protection against seismic shock.

Amer. Concrete Pipe Assn.

(*From page* 173)

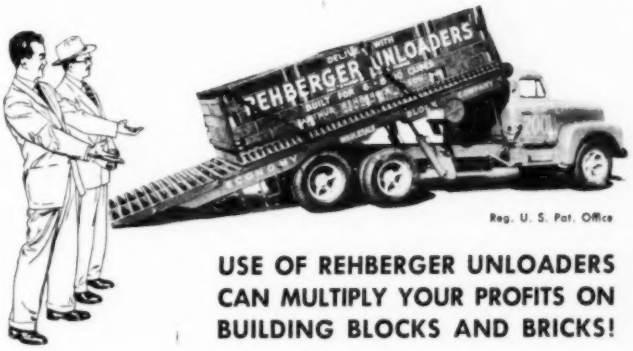
November 26-28, 1951, at the Drake Hotel. The papers presented were as follows: *Tamped Pipe* by Elmer Leuliette (Universal Concrete Pipe Co.), *Centrifugal Pipe* by J. A. Dunn (Hume Pipe of New England, Inc.), *Packerhead Pipe* by Carl A. Bluedorn (Zeidler Concrete Products Machinery Co.), and *Cast Pipe* by Walden Wren (Universal Concrete Pipe Co.). Discussion periods followed each paper.

CMP and Concrete Pipe

CMP and Concrete Pipe was the subject of an address by Delmar G. Runner, chief, Cement Products Branch, Building Materials Division, NPA. This branch, he said, deals not only with concrete pipe, but also with concrete products, ready-mixed concrete, etc. Mr. Runner gave a brief resume of its aims, duties and history, which began in 1942. The branch was reactivated in the middle of 1951 because the serious shortages of steel, aluminum, and other vital materials required drastic action. More steel will soon be available, said Mr. Runner, but shortages of some other materials may continue into 1953. The supply of cement is expected to be ample

(*Continued on page* 178)

OUR CUSTOMERS WILL PROVE TO YOU!



Reg. U. S. Pat. Office

USE OF REHBERGER UNLOADERS CAN MULTIPLY YOUR PROFITS ON BUILDING BLOCKS AND BRICKS!

You will be agreeably surprised at the costs you can cut and the added profits you can make with Rehberger Unloaders. For proof, talk to any of our customers. A partial list includes:

John H. Armbruster Co. Aurora, Ill.
Auburn Cement Products Co. Auburn, N. Y.
Barnes & Cone Syracuse, N. Y.
Best Block Co. Inc. Metuchen, N. J.
Building Products Corp. Bronx, N. Y.
Castle Block Co. Tarrytown, N. Y.
The Cincrete Corporation Astoria, L. I., N. Y.
Concrete Masonry Corp. Elyria, Ohio
Concrete Products Mishawauka, Ind.
De Yorgi Bros. Bronx, N. Y.
Economy Coal & Building Materials Co. Waukegan, Ill.
Erie Builders Supply Co. Erie, Penna.
Faber Cement Block Co. Paramus, N. J.
Hain Bros. Inc. So. Norwalk, Conn.
Imperia Bros. Pelham Manor, N. Y.
Lake Shore Cement Products Michigan City, Ind.
Mackay Trucking Corp. New York, N. Y.
Massachusetts Cement Block Co. Medford, Mass.
Milford Concrete Products Milford, Conn.
Multiplex Concrete Co. East Orange, N. J.
Oliver Manufacturing Co. Rahway, N. J.
Picone Bros. Farmingdale, L.I., N.Y.
Plasticrete Corp. Hamden, Conn.
J. Rappoli Co. Medford, Mass.
Waterbury Ready Mixed Concrete Co. Waterbury, Conn.

There is nothing else like the Rehberger Unloaders. It's unique in its field. Write for full information.

ARTHUR REHBERGER & SON, INC.
320 FERRY STREET, NEWARK, NEW JERSEY
VEHICLE ENGINEERS FOR 66 YEARS

The widely differing needs of ready mixed concrete operators — varying with local conditions, load limitations, payload requirements and wet-mix or dry batch operation — have called for a new type of truck mixer.

The answer of the industry's leader is the flexible model "MIX PLUS," designed to mount on standard makes of trucks, with the light weight and proper load distribution to haul the biggest legal payload of any truck mixer on the road.

Basic in the "MIX PLUS" model is Jaeger's proved design of "dual mix" drum with its deep spiral blades, its exclusive throw-back remixing blades and its correct ratio of diameter to length so essential for mixing-in-mass — the drum preferred by architects and engineers as well as plant operators because it is the most efficient to mix as well as the fastest to charge and discharge —

PLUS light weight not excelled by any other make of truck mixer, standard or non-standard, claiming equal payload capacity — *averaging 1500 lbs. lighter per size than 1951 Jaeger models* —

PLUS ability to mount on all standard makes of trucks with the shortest cab-to-axle dimension when permitted under state weight laws —

PLUS ruggedness of drum, frame and supporting members to haul the biggest volume of material any operator may wish to carry, on or off the road —

PLUS completely flexible choice of whatever loading method, power, transmission and water system best suits your own particular preference, local conditions and plant operation.

In a Jaeger "MIX PLUS" you can haul the biggest legal payload of any truck mixer on the market, charge, mix and discharge faster than with any other truck mixer, and continue to enjoy these advantages throughout a life expectancy of 8 to 10 years, compared with the 4 to 5 years average service of cheaply built mixers that cost as much or more to buy.

the engineered answer to your payload problem

JAEGER "Mix Plus"

flexible model truck mixers or agitators

3 YARD, 4990 lbs. • 4½ YARD, 6400 lbs. • 6½ YARD, 7200 lbs.

Look for these exclusive Jaeger features

They mean faster operation, more payload trips per day, less time and cost of maintenance and years' longer life:

Continuous spiral blades of greater depth and exclusive Jaeger contour plus patented "throw-back" blades giving fastest charging, mixing and discharge.

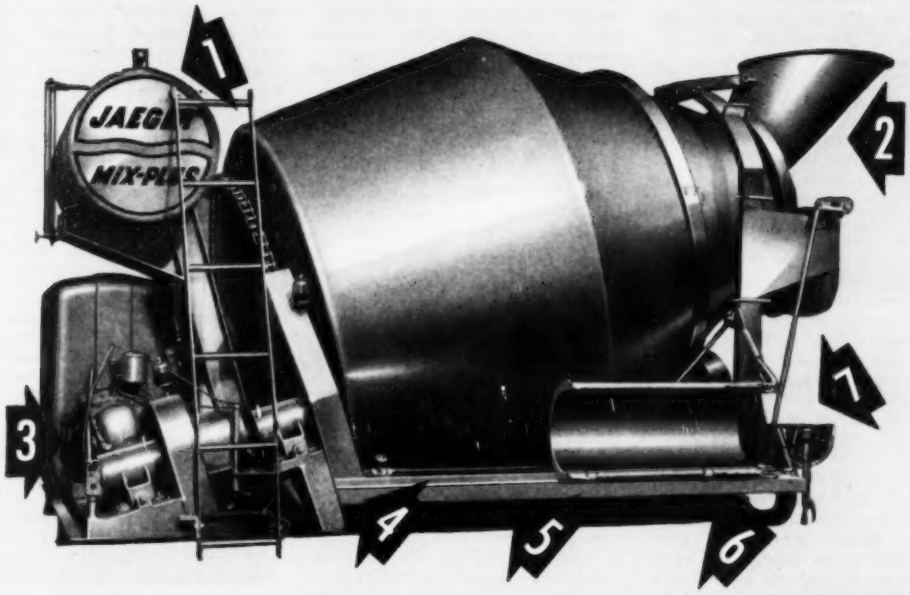
Long life, heavy duty drums of abrasion resisting Man-Ten steel, 5/16" one-piece drum heads (not the usual 3/16"), 3/16" main cone (not the usual 10 gauge), 3/16" x 12" blades, (not the usual 8" to 10" blades of 10 gauge steel), with exclusive bridge-truss blade foot construction instead of unsupported blades used in all other truck mixers.

Revolutionary "Comatic" hydraulic transmission — starts, stops and reverses drum rotation with finger-tip control.

Open type end loader with exclusive instant-opening hopper gate. Gate prevents cement blow-back and water spillage when loading, gives complete concrete control.

Perfected-seal end loader — positively self-aligning and with built-in pressure lubrication that protects from grout, flushes seal each time it is lubricated.

High pressure clog-proof water jet (60 gpm @ 65 psi) operated by Jaeger 1½" "Sure Prime" Pump with Bal-Lok clutch. Wash-off hose standard.



1 TAKE YOUR CHOICE

1: *2-Compartment Tank* with either automatic or sight gauge measuring.

2: *Single Flush Tank.*

3: *No Water System.*

2 TAKE YOUR CHOICE

1: *End Loader with perfected seal* — for agitator or maximum dry-batched payload.

2: *Open Type End Loader with patented hopper gate* — for lightest weight in dry batch operation.

3: *Top Door and Sealed Discharge Door* — for top-loading agitator.

Side panels available if required.

3 TAKE YOUR CHOICE

1: *Continental Engine* with "Comatic" hydraulic transmission — or with conventional transmission.

2: *Chrysler Engine*, fluid drive, with conventional transmission.

3: *Truck Engine Drive* with "Comatic" transmission.

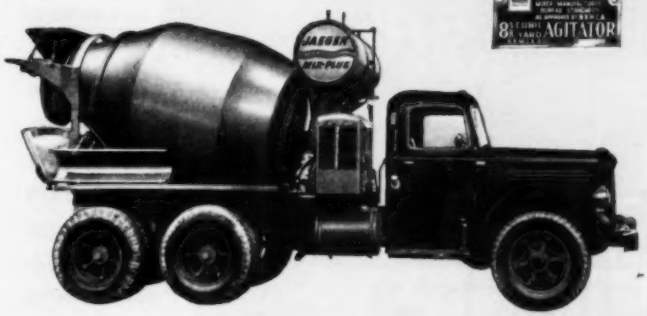
4 Large diameter sprocket with replaceable teeth and 2" pitch chain, as used for over 15 years in Jaeger side-discharge truck mixers.

5 Mudguards and cat walk are one unit. Protect full length of drum.

6 "Swing Away" 3-Piece Chute meets all discharge conditions. Provides direct bucket discharge or 5', 8', 10' and 13' chute lengths.

7 One turn of a wheel, or a single lever movement, fully opens any Jaeger discharge mechanism. All controls easily operable from ground.

Jaeger Model HM-D "MIX PLUS" truck mixers and agitators fully comply with all standards of the Truck Mixer Manufacturers Bureau, *and bear the Bureau's Rating Plate in evidence.*



For full information and prices see your nearest Jaeger distributor or write us

THE JAEGER MACHINE CO., **602 Dublin Ave., Columbus 16, Ohio**

World's largest builders of TRUCK MIXERS, AGITATORS — PUMPS • COMPRESSORS • CONCRETE MIXERS • PAVING MACHINERY

Amer. Concrete Pipe Assn.

(*From page 175*)

in 1952 because of the expansion of capacity in that industry, and aggregates will also be plentiful.

On the same subject Arthur F. North, industry analyst of the Cement Products Branch of NPA, said that for some time after the Korean Incident started there was no real need for drastic control of vital materials, but when reverses set in for the UN forces late in 1950, the possibility of long-drawn-out skirmishes of this kind or even all-out war made such controls necessary. There was much confusion at first, he said, especially with regard to the concrete pipe industry, but things are now under control.

In answer to questions from the floor, these two gentlemen assured all applicants for steel of equitable treatment and emphasized that just as good results can be obtained by applying to the regional offices as to the main Washington office. It was pointed out that no other building material industry is getting a higher percentage of its base period consumption. A producer supplying a military contract is given enough additional steel for it above his allotment, and foreign steel can also be used in excess of the allotment, provided that no copper, aluminum, or other restricted material is required in addition. There are, it was pointed out, special rules regarding additional steel for capacity added by plant expansions or new plants. Anyone contemplating such expansions was advised to consult Mr. Runner or Mr. North before investing in such a venture in order to find out if the additional steel can be obtained.

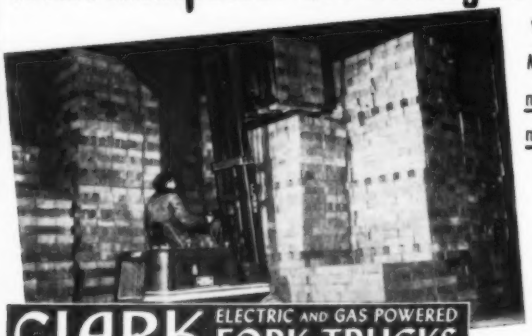
Tampa Reinforced Pipe Project Paul E. Langdon, a partner, and G. M. Hite, chief construction engineer of Greeley & Hansen, consulting engineers of Chicago, described a huge sewer project recently completed at Tampa, Fla., which used 150 miles of pipe, ranging from 6- to 24-in. vitrified pipe to 27- to 84-in. reinforced concrete pipe. Of this total only 15 miles was concrete pipe; but because of the large sizes it formed the bulk of the tonnage. This city, which grew from a population of 6,000 in 1920 to over 180,000 today, including suburbs, had a serious sanitary problem. Large areas had no sanitary facilities, the existing treatment plants were ineffective, and 40 outlets discharged sewage direct to streams. Slides were used to illustrate the type of pipe used, and some of the many problems encountered in laying it. Most of the lines were below ground water level; but care in laying and sealing the joints has kept infiltration well below the limits. Both rubber gaskets and mortar were used. Particularly interesting were some of the problems encountered in laying subaqueous pressure pipe lines. A hydraulic dredge was used to excavate an underwater channel, and the placing and refilling were also described.

Entertainment The highlight of the entertainment program was the cocktail-reception party on the last night of the meeting, which was followed by the banquet, an excellent program of entertainment, and dancing to a good orchestra.

On Thursday night a cocktail-reception party was given by the Illinois Concrete Pipe Manufacturers. There was a luncheon for members of the American Concrete Pressure Pipe Assn. on Wednesday; and luncheons were hold by the American Concrete Pipe Assn. on Friday and Saturday, with guest speakers. For the ladies, in addition to the above, there was a conducted tour of Chicago.

Pressure Pipe Meeting The American Concrete Pressure Pipe Assn. held a half-day business meeting which was presided over by P. R. Hirsh, president. Business included the reports of the president, secretary, treasurer, managing director, and research engineer. Louis R. Howson, consulting engineer, Alvord, Burdick & Howson, Chicago, also told of *Experiences with Concrete Pressure Pipe*. In his long experience with all kinds of pipe Mr. Howson has accumulated a wealth of information and he gave those present many valuable pointers which should help them meet the changing demands and tightening specifications for their product. His first experience with reinforced concrete pressure pipe was 20 years ago, when 7 miles of 60- and 54-in. pipe was installed in Louisville, Ky. Only $400 has since been spent for maintenance on this line, and succeeding installations have gone concrete. He also described other installations in various parts of the country. In closing, he said that the increasing use of reinforced concrete pressure pipe in waterworks practice reflects the high plane upon which it has been pioneered, developed, and sold to the public.

With manpower shrinking and hard to get, why not get MORE POWER— more man-hours more production —out of the man-power you have, by using CLARK EQUIPMENT for your Materials Handling.



CLARK ELECTRIC AND GAS POWERED FORK TRUCKS
AND POWERED HAND TRUCKS • INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 90, MICHIGAN
Please send: ☐ Material Handling News ☐ Condensed Catalog
Name
Firm Name
Street
City Zone State
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

Return the coupon and get this helpful free literature.

N.C.M.A. Convention

(*From page* 168)

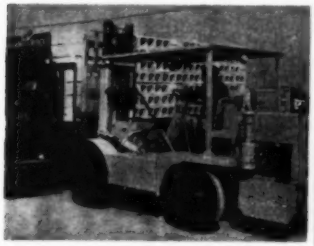
purpose, Mr. Brunenkant said, certain fundamental criteria must be established, such as the definition of the area and whether the lowest price, the highest price or the average price should be established as an area figure. Mr. Brunenkant said that after the Building Materials Branch drafts what it considers a suitable regulation outlining such criteria, an Industry Advisory Committee will be appointed to explore the problem in greater detail.

(This report will be concluded in the May issue of The Concrete Manufacturer. Due to the volume of timely material scheduled for publication this month, it was impossible to run the report in its entirety.)

NEW MACHINERY and SUPPLIES

● Lift Truck

A line of high-speed, extremely-maneuverable lift-trucks, designed for handling cubed concrete-masonry units and similar heavy-duty industrial tasks, has been developed by the Duarte Steel



& Equipment Company, 855 E. Meridian St., Duarte, Calif.

Need for increased road clearance for unpaved storage areas around block plants dictated the design to a great extent. The trucks are available in 5,000-, 6,000- and 10,000-lb. capacities.

International truck parts are used wherever possible, giving the advantage of low-cost and standardized replacements. Motive power is provided by the new International Super Blue Diamond 269 rubber-mounted truck engine developing 105 hp. at 3,000 r.p.m.

Front and rear axles are standard and interchangeable with International trucks. Warner and Fuller transmissions are used. A Vickers hydraulic system is employed to lift the loads. Driver fatigue is reduced to the minimum through the use of oversize springs with hydraulic shock-absorbers, plus Hydrovac power brakes which require only slight foot pressure.

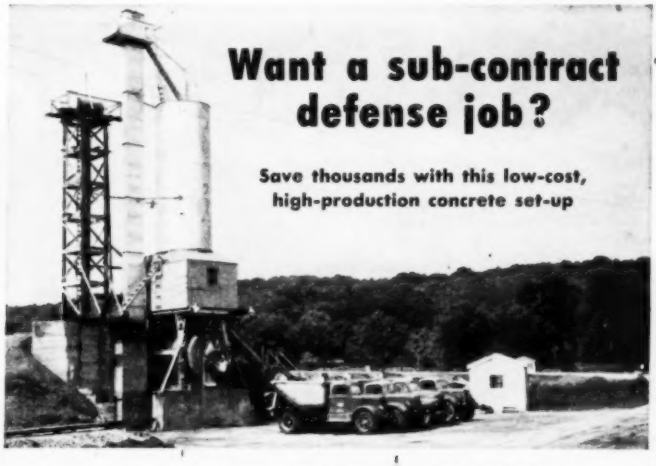
Chrysler engines with fluid drive transmissions are available.

● Lightweight Mixer Truck

A truck that is said to give an additional half yard capacity of concrete and still meet highway weight limitations is the White 3000 series. The White 3020, with a Challenge 3½ cu. yd. mixer, is shown.

This unit, when loaded with 3½ cu. yd. of concrete mix and 125 gal. of water, has less weight on the rear axle than other types with 2¾ cu. yd. of mix in the same mixer and with the same water.

Loaded weight of the unit is a total of 27,450 lb. with 7,500 lb. on the front axle and 19,950 on the rear axle. The White Motor Co., Cleveland, O.



Want a sub-contract defense job?

Save thousands with this low-cost, high-production concrete set-up

Keep your eyes open. Any day now you'll hear of a big defense job nearby. They'll need a lot of concrete—perhaps more than your annual production. You can get this business. Do it like Richter of Cincinnati.

He bid low on a new power plant near him, but too far to supply from his plants. So he built the low-cost hillside central mixing set-up shown above. Note the bulk cement bin, elevator and ramp at rear where batch trucks dump directly into 3-yard mixer. This simple set-up saved him money.

But his big saving came from using four Dumpcretes instead of transit mixers. These concrete bodies cost less to buy, to run and to maintain.

They gave him top production—up to 500 yards on an 8-hour shift. Dumpcretes dumped directly into buckets, forms and piling. Their downtime and maintenance was practically nil, because of their simple, rugged construction.

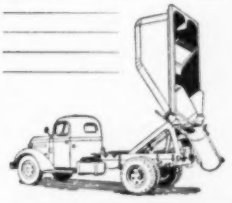
When this job was finished he moved the whole set-up to a larger job—60,000 more yards. What more can you ask . . . low investment, portability from job to job, increased production, customer satisfaction, and the pay off—greater profits. Send for the complete story today.

Please send booklet "12 Ways To Set-Up For Central Mixing."

Name_____

Firm_____

Address_____



DUMPCRETE

DIVISION

MAXON CONSTRUCTION COMPANY, INC.

639 Talbott Bldg.
Dayton 2, Ohio

EARLY DELIVERY ON CERTAIN MODELS — ORDER NOW!

● Diesel Lift Truck

An industrial fork lift truck powered by a diesel engine and a fluid transmission is being made by the Philadelphia Division, Yale and Towne Manufacturing Company, Philadelphia 15, Pa.

The unit was especially designed for use where fire hazards exist, where there is a limited amount of fresh air, and where heavy-duty operation is necessary. It is powered by a six-cylinder Hercules diesel engine with a rating of 70 hp. The engine is coupled to a Twin-Disc hydraulic drive which transmits the engine power in a smooth flow and prevents stalling, and damaging starts and stops. Hypoid gearing, hydraulic brakes, automotive-type steering, and unit assembly of components are additional features.

UNIT TV*

Terrific Value...
IN EVERY CHANNEL OF OPERATION!

SEE this modern ½ yard excavator perform and you'll see high efficiency and versatility coupled with low maintenance cost. The Unit 614 combines speed, power, and finger-tip responsiveness. It has the same rugged construction usually found in machines of greater capacity. Check these life-prolonging features: One-piece gear case . . . Twin hook rollers . . . Automatic traction brakes . . . Drop forged gears . . . Involute splined shafts . . . Disc type clutches . . . Straight-in-line mounting of engine and main machinery. Streamlined FULL VISION CAB provides 360° visibility. Keeps both man and machine operating at top efficiency. Promotes safety. Write for Catalog No. 5000.

UNIT CRANE & SHOVEL CORP.
6401 W. Burnham St., Milwaukee 14, Wis.

Select Your Favorite UNIT Star

★ UNIT 357 Mobile Type ½ Yard Excavator Crane up to 9 tons.
★ UNIT 614 Crawler Type ½ Yard Excavator Crane up to 8 tons.
★ UNIT 1020 Crawler Type ¾ Yard Excavator Crane up to 10 tons.
★ UNIT 1520 Mobile Type ¾ Yard Excavator Crane up to 20 tons.
★ UNIT 1014 Truck Crane ½ Yard Excavator Crane up to 12 tons.
★ UNIT 152OT Truck Crane ¾ Yard Excavator Crane up to 20 tons.

All Models Convertible to ALL Attachments.

See What UNIT Can Do in '52

UNIT

Send for your copy of the UNIT "TV" brochure. It portrays the complete UNIT line; illustrates ten reasons why UNIT is a better machine.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

A 6028-½I-C

● Communications Receiver

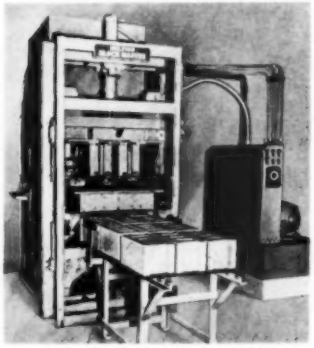
A radio communications receiver for use with mobile radio systems that uses only 14 standard tubes has been announced by Motorola, Chicago 51, Ill.

The new unit is said to be greatly simplified and to use only five types of standard, easily-obtained radio tubes. Terminal and service points are accessible without removing other portions of the set. The new unit is being supplied on all current shipments and is fully interchangeable with previous models. It can also be easily adapted to split-channel operation when such a system is introduced.

● Three-Block Machine

A completely automatic three-block-per-cycle machine has been made available by the Multiplex Machinery Corporation, Elmore, O.

The machine, the Blockmaster "No. 3," uses plain pallets in making any style or size of block with any aggregate, and



is hydraulically powered by a separate power unit that may be used to power additional machines. The blocks are compressed by a combination of pressure, vibration, and tamping. Moving parts have been held to the minimum to simplify repair and maintenance.

E. J. Bechman, Rt. 4, Oconomowoc, Wis., has acquired the national distributorship for Split-Rock machines and processes for the manufacture of Split-Rock masonry.

● Dual-Purpose Attachment

An attachment that serves as a backrest for the standard hand lift pallet trucks of the Yale and Towne Manufacturing Company, Philadelphia Division, Philadelphia 15, Pa., or as a base for handling 7- or 12-in. skids or pallets is available.

The attachment locks straight up when not in use and serves as a backrest for

the pallet load. When needed it can be adjusted to the 7- or 12-in. positions by a cam and slot arrangement on the side. This attachment is designed to give flexibility where several heights of skids or pallets are handled.

● Masonry Water Repellent

"Daracone" a high-silicone-content material designed for use on exterior masonry is being distributed on a national scale. It is designed to be used on concrete, brick, cinder block, and other buildings and repels water without sealing the pores. This permits water vapor on the interior to dry out.

Daracone is said to penetrate the material to which it is applied without leaving a surface film. There is said to be no discoloration or efflorescence. The material is not affected by water and does not oxidize. A life of 5 to 10 years is predicted. This is a product of the Dewey and Almy Chemical Company, Cambridge, Mass.

● Steel Block Molds

Heavy-duty molds for stepping stones and splash blocks are being manufactured by the Concrete Mold and Engineering Company, P. O. Box 801, Louisville, Ky. The molds are made of 14-gauge steel and are welded at the joints. They are made in several popular sizes.

Jackson and Church Company, Saginaw, Mich., has named Francis M. Hoye director of engineering and Dr. Harold E. Graves director of chemical engineering. Both men were formerly with the University of Rhode Island as heads of the mechanical engineering and chemical engineering departments respectively.

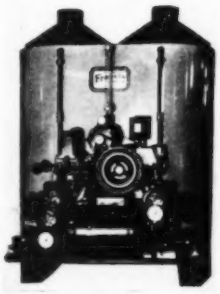
Four other engineers who were formerly connected with universities have been appointed to positions with the company. They are Ralph C. Emig, professor of engineering at Lawrence Tech.; Michael T. George, of Wayne University; Leonard M. Majeske, of the University of Detroit and the Catholic University of America; and Frank M. Wheeler, DePauw University.

Two other professors, now with the University of Rhode Island, will join the company in June. They are Charles Lee Dong Chin, and James F. Grove.

Joseph R. Williams, 57, products manager of pavers and portable mixers at the Dunellen, N. J., plant of Worthington Pump and Machinery Corporation, died on February 1, 1952.

Mr. Williams joined the Ransome Machinery Company in 1923, after experience with Bates & Rogers and the A. J. Smith Company. In 1943 he was made product manager of the paver section when the Ransome Company became a division of Worthington. In 1947 he also was made product manager of portable mixers.

REDUCE Curing Costs . . . SPEED Curing Time
Do A BETTER Curing Job . . . with FRANCIS Steam Generators



- Fully-automatic FRANCIS generators provide concrete-block plants with flexible, low-cost heat and humidity, so necessary for proper and rapid curing.
- Combined heat and moisture—or either semi-dry or saturated steam—may be generated as desired.
- Other features: no steam engineer required; steam up in 3 minutes from a cold start; twin units for standby protection; descaling system keeps coils clean. Costs half that of a conventional boiler.

● *Write for full particulars!*

Francis Steam Generator Co., Inc.
10202 E. Artesia Avenue, Bellflower, California

COMMENT
from the
BUTLER ENGINEER

H-Bomb Baby Born at Butler Bin

I'm kind of a proud papa these days. Not to the point of stuffiness I hope; just walking around in a genial glow. But the baby *is* terrific and I simply have to tell you about him!

He's the control system we designed and built for the super-super automatic, completely interlocked, push-button operated Butler Central Mixing Plant which will pour concrete for the H-Bomb plant.

That baby was full grown at birth. Here's what he does:

He offers a choice of 5 predetermined batches at the turn of a selector knob. Hit push-button and batch starts. Filling gates open. Aggregates, cement and water flow until they reach exact weight. Each of 7 dials prints record of batch. Lights flash when balance is reached. Nothing can go wrong for it's all interlocked against every possible sin of omission and commission. A chimpanzee just hitting push buttons at random could turn out nothing but the right batch. Much more to tell but no room. Anyway, everything's as automatic as a trip to hell.

I'm afraid I stretched a point when I claimed sole parenthood. It always takes more than one to produce a baby. Here at Butler Bin all of us exchanged cigars at the birth for really everyone had a part in the conception. Sounds immoral, but you know what I mean.

Yours for that ounce of H-Bomb prevention,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

P.S. Want to see pictures of our baby? We'll be proud to send 'em. Just ask!

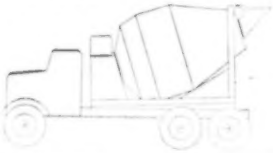
Smile with Smith-Mobile

Smith TRUCK ENGINE DRIVE Certainly Solves My Weight Distribution Problem!

You'll like Smith-Mobile's new Truck Engine Drive because it gives you a much **better weight distribution.** The engine on the mixer is eliminated. That **reduces deadweight of mixer by about 1300 lbs.** and enables you to carry **bigger payloads** without exceeding highway weight limits. But even more important is the fact that the mixer is considerably shorter with the result that the **mixer drum is mounted much closer to the cab,** removing considerable weight from the rear axle and placing it on the front axle. That enables you to **meet stringent rear-axle load restrictions.**

These Truck Engine Drive units also have other advantages. One engine instead of two engines naturally means **less fuel consumption** and **less engine maintenance** and, of course, they have all the usual Smith-Mobile advantages of **long life, low maintenance costs, rear-end charging, visible mixing, fast discharge,** etc. Get all the facts today from your nearby Smith Distributor.

Smith separate engine drive compared with truck engine drive. Note how mixer drum is mounted closer to cab, moving weight forward.



Smith Truck Engine Drive is available for both LOADLIMIT and CLOSED END Models, in 4½, 5½ and 6½ yard sizes.

Have you investigated Smith LOADLIMIT Models? They weigh less and cost less than smaller size closed end machines. Yet they haul bigger payloads. The initial investment is less and operating costs are lower. The rear-end door unit is eliminated, reducing maintenance costs to rock bottom. Ask for Bulletin No. 251.

The T. L. SMITH CO., 2887 N. 32nd St., Milwaukee 45, Wis., U. S. A.

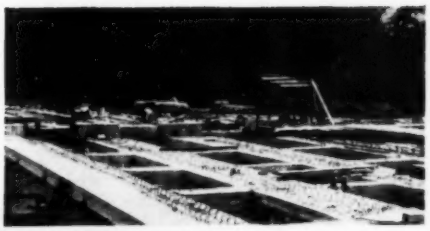
SMITH
THE T. L. SMITH CO. MILWAUK-E 45 USA

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

A 7059-1P

widely used,
widely endorsed



ayr trap

THE AIR-ENTRAINING AGENT FOR CONCRETE

a large ready-mix plant: "Having used Ayr-Trap for the past four years with very satisfactory results places us in a position to recommend it to all ready-mix concerns."

a concrete block company: "We heartily recommend Ayr-Trap. The quality of the block is much improved and the appearance much better. The whole operation in making the blocks is easier."

a general contractor: "Horn Ayr-Trap is very beneficial to our construction due to the type of aggregate we use. The Ayr-Trap controls the set of the mortar by functioning as a dispersing agent."

a mining company: "We are firmly convinced that the use of Ayr-Trap makes a much more workable concrete, that stripped work has a much better appearance with a much greater resistance to damage from freezing."

Used in the newest State Turnpike circle and bridge construction

for heavy concrete construction

Ayr-Trap can be added at batching plants or on the job. It makes concrete more durable, increases its plasticity and minimizes segregation and bleeding. Increased plasticity with Ayr-Trap insures better placement of concrete in and around closely spaced reinforcing bars. Ayr-Trap develops high resistance to moisture absorption and attack from freezing and thawing forces.

road building

Ayr-Trap improves scaling resistance and protects pavements against the destructive action of chloride salts for ice, snow removal.

OTHER BENEFICIAL PROPERTIES

- Permits a reduction in the water cement ratio.
- Used in liquid form as follows:
  3 liquid ounces per cubic yard of 5 or 6 bag mix.
  1 pint for 5 cubic yards, 6 bag mix.

HORN

A. C. HORN COMPANY, Inc. est. 1897

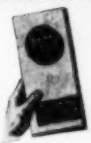
Manufacturers of materials for building maintenance and construction
LONG ISLAND CITY 1, N. Y. • Los Angeles • San Francisco • Houston
Chicago • Toronto SUBSIDIARY OF SUN CHEMICAL CORP.

CM-2

A. C. HORN COMPANY, INC.,
Long Island City 1, N. Y.

Please send me ☐ complete data on AYR-TRAP

☐ free copy of your 96-page Construction Data Handbook



NAME_____ TITLE_____

FIRM NAME_____

ADDRESS_____

CITY_____ STATE_____

Pit and Quarry Helps You Operate More Profitably

Every issue of PIT AND QUARRY is full of information you can use in your business. It gives you practical ideas on every phase of your operations.

To keep its readers fully informed, PIT AND QUARRY taps every source. Our field editors travel more than 30,000 miles a year to describe the processes and methods used by the outstanding plants making your type of product. Government activities affecting the field are interpreted so that you can better adjust your business to their regulations. Complete reports of all important conventions are published in PIT AND QUARRY. The new equipment and supplies which may make production more efficient are announced in each issue.

Reading PIT AND QUARRY is like having a conference every month with the leading men in your industry. You don't have to stir out of your chair to get information that otherwise would take you years to obtain by your own efforts and experience.

The cost of this service is only $3 a year. Start your subscription at once by just filling and mailing the coupon below.

Return This Coupon To-day—Start Your Subscription with the next issue.

PIT AND QUARRY PUBLICATIONS,
431 So. Dearborn St., Chicago 5, Illinois.

Enclosed find remittance for which enter my subscription to Pit and Quarry for..... .....
.....1 year ($3.00).....starting with the next issue. (Foreign add $3.00 per year.)

My Name .....

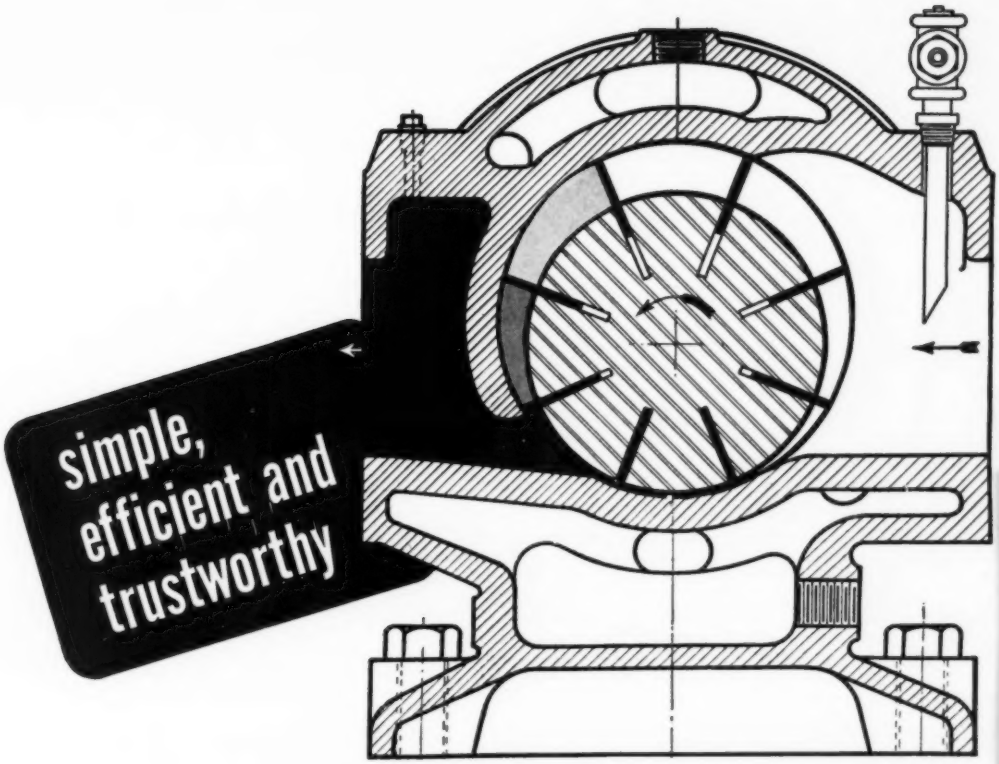
Title .....

Company Name .....

Send to (Address) . . ..

We Produce ....

4-52



the FULLER ROTARY COMPRESSOR

For compressing gas, no reciprocating compressor can compare in simplicity and operation with a rotary.

PRINCIPLE IS SIMPLE

An eccentrically mounted, accurately machined rotor, with integral shaft, is supported on roller bearings in each of the heads. The eccentric rotor mounting leaves a crescent-shaped space, which is divided into compartments by wear-compensating blades. These slide freely in milled slots in the rotor, and are held, pressure tight, against the cylinder solely by centrifugal force. These compartments vary from minimum to maximum on the suction side, and from maximum to minimum on the compression half of the revolution. Properly designed blades, and a wide seal between rotor and bottom of cylinder, assure high and **maintained** volumetric efficiency; the multiple blades minimize pressure differences between compartments and contribute to maximum output with minimum wear.

OPERATION IS EFFICIENT

The Fuller Rotary Compressor assures a smooth flow, with no pulsations ... numerous displacement deliveries per revolution as against one in a single-cylinder piston compressor. Other advantages are: Direct drive; Compact installation; Simple foundations; Maintained capacity and efficiency; and No valves to leak. Because there are few moving parts—rotor, blades, and bearings, **maintenance time and costs are negligible.**

For further information on Fuller Rotary Compressors that will do a better job for you, write for Bulletin C-5.

Fuller

DRY MATERIAL CONVEYING SYSTEMS
AND COOLERS • COMPRESSORS AND VACUUM PUMPS
FEEDERS AND ASSOCIATED EQUIPMENT

FULLER COMPANY
Catasauqua, Pennsylvania
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.

C-218

Lafayette CONCRETE PIPE COMPANY
INCORPORATED
Lafayette, Louisiana
March 7, 1952

Houston Concrete Machinery
116 Heights Boulevard
Houston, Texas

Gentlemen:

We will have had our Dixon Model 4824 Packerhead Pipe Machine in operation one year on next Saturday March 15, 1952.

We feel that the Model 4824 is far superior to our old Model 48A and we had no complaints on it. Using one stripper, two offbearers, the machine operator and the mixer man we produce in excess of 1000 feet of 42" Bell & Spigot sewer pipe in 8 hours and allow 30 minutes for cleaning up in the afternoon. The production on all other sizes is in proportion.

Our Batching plant is, as you know, one end of the latest design and our aggregates are of the best quality. As a result we have been able to consistently produce top quality pipe that always exceeds specifications in every respects.

We appreciate the overnight service from Houston on wearing parts which enables us to keep our inventory to a minimum.

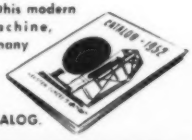
We cannot commend your machine too highly and want to take this means to express our deep appreciation for your splendid cooperation during the years of our pleasant association.

We invite you and any of your customers to come and visit our eastern plant at any time and extend best wishes for your continued success.

Cordially yours,
LAFAYETTE CONCRETE PIPE CO.
Thomas G. Foti
Manager

HERE'S WHAT ONE USER THINKS ABOUT HIS Dixon PIPE MACHINE

For the full story of this modern hydraulic pipe machine, which is pleasing many users all over the country, WRITE FOR OUR NEW, 52-PAGE CATALOG.



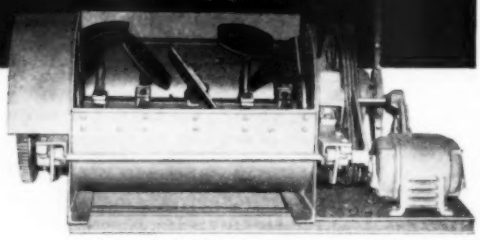
HOUSTON CONCRETE MACHINERY CO.
Office and Mailing Address: 116 Heights Blvd. HOUSTON, TEXAS
Plant: 6600 Washington Ave.
Manufacturers of:
Dixon Pipe Machines
Pipe Bend Machines
Dixon Mixers
Septic Tank Forms
Dixon Conveyors
Off-Bearing Carts

MULTI-BLADE MIXERS

Faster—Better—LOWER COST Mixing

"Super Action" blade arrangement gives these "super" results! Unlike the two conventional spiral blades, which push the mix one way along their entire length, Multiplex' ten paddle shaped blades push the mix in opposing directions. This cutting, turning, and kneading produces thorough mixing in shorter time, at less cost. Liner wear is reduced, as the mix is churned against itself.

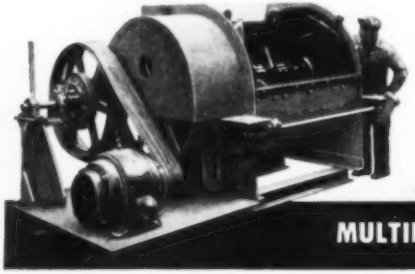
Around these "super action" paddles Multiplex builds a solid, dependable mixer with all the common sense advantages of: convenient charging height, discharge door control in front, anti-friction bearings, and wear-resistant, replaceable liners and blades.

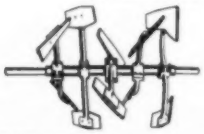


V-belt drive, rear discharge, 18-cubic foot capacity

Many *Multi-Blade Mixers*, in standard sizes from 3 to 60 cubic feet, are in stock for immediate delivery. All models may be had mounted on rubber tired steel trucks. Discharge door may be in the rear, either end, or bottom, or in more than one location, as desired.

Special Mixers are made to suit your special requirements. During our 40 years of successful mixer design and manufacture we have produced mixers as large as 600 cubic foot capacity.





V-belt drive, end and rear discharge, 60-cubic foot capacity

To profitably operate any mixer, it must fit your needs and facilities. Multiplex engineers can help you plan your plant expansion. We can supply the superior mixers, fully automatic block machines, vertical and inclined skip hoists, and the compartment aggregate bins required for successful plant operation.

MULTIPLEX Machinery Corporation • Elmore, Ohio

HELTZEL

. . . batch equipment at Levittown where efficiency spells success

Levitt's Heltzel plant at their new development near the U. S. Steel Corp., Fairless Works

These facts speak for themselves:

1. Heltzel batch plants were used exclusively in construction of the world renowned Levittown, Long Island, N. Y.
2. One of these plants averaged 1800 cu. yds. of concrete per day.
3. Heltzel plants moved with Levitt & Sons, Inc., to their huge new development at the Fairless Works of United States Steel Corporation.

TYPES OF HELTZEL EQUIPMENT THAT WORKED SO EFFICIENTLY FOR LEVITT & SONS, INC.

ORIGINAL INSTALLATION—One 200-ton combination batching plant with 3 cu. yd. batcher for truck mixers; plus a traveling skip hoist to charge three concrete block machines.

SECOND INSTALLATION—Two 100-ton combination plants with two 5 cu. yd. batchers. This transit mix operation set a record average production of 1800 cu. yds. concrete per day.

THIRD INSTALLATION—When set up for the U. S. Steel project, an Ohio Belt Elevator (built by Heltzel) for charging aggregates, and a bulk cement elevator were added.

Heltzel engineering working in close cooperation with Levitt made this high production possible.

Heltzel BUILDS IT BETTER

WRITE FOR CATALOG K-37

Where Levitt batched an average of 1800 cubic yards of concrete per day to set new production records.

This 200-ton plant charged both truck mixers and concrete block machines through a uniquely engineered arrangement of screw conveyors and traveling skip hoist.

Ohio Belt Conveyor (built by Heltzel) replaced clam shell. Complete belt conveyor and feeders are 30" wide and 240' long. Bulk cement elevator installed at same time.

HELTZEL

STEEL FORM AND IRON CO.
WARREN, OHIO, U. S. A.

Read all about OSWALT SERVICE for Vibrapac Owners!

EXTRA PROFITS . . . . at least $60.00 per day!

That is what you can expect when your Vibrapac machine is equipped by Oswalt Service so as to raise production from 600 to 900—8x8x16" building units per hour without sacrifice of quality.

The reduced overhead, increased efficiency and greater volume will pay for the entire cost of conversion within four to six months of operation.

Now is the time to get this work done before your busy season starts. Write for further details today . . . and let us send you a quotation for converting your plant.

OSWALT ENGINEERING SERVICE CORP.

1335 Circle Avenue, Forest Park, Ill.

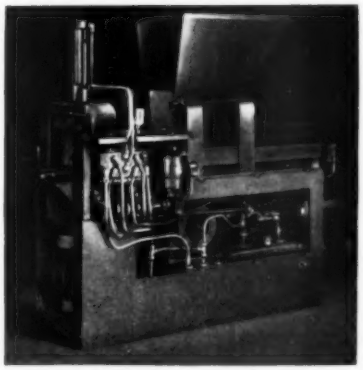
Phones: EStebrook 8-3666
FOrest 6-3898

Many satisfied customers now operating more than 70 machines.

Full details in this Booklet, including actual operating records of Oswalt Serviced Plants.

OSWALT SERVICE BOOKLET

BLOCK MACHINE EFFICIENCY AT ITS PEAK POINT



The New, Revolutionary

HYDRO-KORPAK

At last comes a block machine of streamlined compactness that brings low-cost automatic production within reach of men of modest capital. One that combines the four major objectives of scientific compacting . . . hydraulic operation, electrically controlled . . . one-man labor . . . and moderate price. All in order to produce a super-fine block — marked by the utmost in accuracy, smoothness and density — at remarkably low production costs. † Among the outstanding construction highlights is lateral compacting, whereby swiftly oscillating cores pre-densify the material in advance of the final intensive squeeze exerted by the powerful hydraulically operated ram. Thus is combined the combination of lateral and vertical packing, with uniform density in every cubic inch. † Regularly equipped to make nominal 8 x 8 x 16" in full and fractional sizes. Attachments available for four other thicknesses: 4", 6", 10", 12". Modular conformation in all dimensions, but can be supplied for making the old standard sizes. † Finely engineered. Precision built. Evidence of rugged construction is a gross weight of more than 2¼ tons. Compactness is shown by over-all dimensions of 90 inches long by 53 inches wide. Fully self-contained. † Write for copy of the new descriptive catalog.

The Superfine Block

CONCRETE EQUIPMENT COMPANY

531 Ottawa Ave., Holland, Mich.

HYSTER® 40 Lift Trucks
handle loads faster and cheaper in
CONCRETE PRODUCTS PLANTS

Hyster 20 (2000 lb. capacity)

Hyster fork-type Lift Trucks, Turret Trucks, Straddle Trucks® and Karry Kranes® have capacity ranges from 1000 lbs. to 30,000 lbs. Sold and serviced by Hyster dealers around the world.

SPEEDY AND POWERFUL. Equally efficient in a crowded plant or in the open spaces of yard storage—great maneuverability. Pneumatic tires permit Hyster 40 to work equally well indoors or outdoors. 4000-pound capacity. Several heights of lift available. Free-lift models. Width of truck—43 inches.

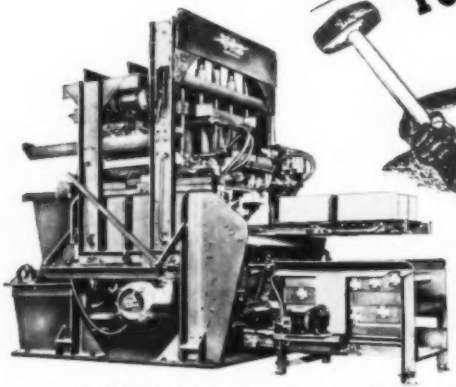
SIMPLE TO OPERATE — EASY TO SERVICE. Conventional controls. Operator rides easy in a comfortable, adjustable, form-fitting seat. Overhead guard protection. Excellent visibility...Truck is designed to make easy all inspection and service operations.

SEE YOUR HYSTER DEALER for a demonstration and list of owners. Or write for literature.

HYSTER COMPANY

THREE FACTORIES

2926 N. E. CLACKAMAS ST., PORTLAND 8, OREGON
1826 NORTH ADAMS STREET.. PEORIA 1, ILLINOIS
1026 MEYERS STREET..... DANVILLE, ILLINOIS



With a GOCORP!

You don't drive a nail with a rubber hammer . . . nor can you get the best block compaction when pallet support depends on rubber or springs. GOCORP clamps the pallet to the mold . . . Vibrates the combination (pallet and mold) with sharp, swift sledge hammer blows . . . No cushioned deceleration common to other machines. Whiplike direction change at each end of the stroke means faster pickup during the stroke and a harder packing blow.

With GOCORP plain pallet machines . . . the King—6 at a time . . . the Senior (illustrated)—3 at a time . . . the Prince—2 at a time . . . You also get:

- **100% Hydraulic Operation**—adjust any operation without affecting others.
- **Main Hopper Feed** — no old fashioned feed drawer.
- **One Man Operation**—reduces labor cost.
- **Front Pallet Feed**—saves space, reverses pallet each time used.
- **The BEST in service.**
- **Other GoCorp Equipment**—Junior Cored Pallet Block Machines . . . Batch Mixers . . . Pipe and Tile Machines.

THE GENE OLSEN CORP.

403 Grace St. Adrian, Mich. Phone 2120

To convert from dry batch to Central Mix, for a package central mix plant, or a semi-portable plant, write: SuPREMIX, Incorporated (an affiliate of GoCorp), 401 Grace Street, Adrian Michigan.

Concrete Manufacturer Classified Section

Advertising Rate Per Issue: $10.00 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

WINTER CLEARANCE

TRANSIT MIXERS

Smith 3 yd. Hi-Discharge Mixer. No Truck @ $2250.00
Rex 2 yd. Hi-Discharge Mixer. No Truck @ $1500.00
Rex 2 yd. Hi-Discharge Mixer w/Int. K-8 @ $3,000.00
Smith 2 yd. Hi-Discharge Mixer w/GMC Truck @ $3,000.00
Jaeger 3 yd. Hi-Discharge Mixer w/White Truck @ $3,500.00
Rex 3 yd. 1950 Model Hi-Discharge Moto-Mixer w/Ford Tandem Truck @ $5,500.00
Rex 3 yd. 1951 Model Hi-Discharge Moto-Mixer w/Chevrolet Tandem Truck @ $5,500.00
Rex 27E Paver. Big Drum. Reduced to $2500.00

CRANES & SHOVELS

Insley "K-12" **Used** ½ yd. Hoe or Dragline. Gas
Insley "K-12" **Used** Diesel ½ yd. Dragline, 1948 model
Insley "L" ⅝ yd. Dragline. **Used** two months
Insley "L" **New** ¾ yd. Dragline or Crane. Used four days

SPECIAL

Long established Lime Dust and Road Rock operation, with all equipment and 32 acres of rock. Price $110,000.00

EIGHMY EQUIPMENT COMPANY
120 S. PIERPONT ROCKFORD, ILLINOIS

BUILD GOOD WILL

ADVERTISING NECESSITIES for the Building Trades. Mason's Line Pins, Mason's 4' yardsticks and 6" celluloid rulers with special concrete block scales, concrete volume calculators, concrete mix selectors, etc. All imprinted with your advertising. Complete catalog on request.

Gorsen Co., 97 Dearing Rd., Mattapan, Mass.

CEMENT COLORS

All shades and grades the highest quality.
Write for color cards, prices and samples
RICKETSON MINERAL COLOR WORKS
MILWAUKEE 2, WISCONSIN
***Established* 1885**

FOR SALE

16' Dunn Mixer and Skip — $650.00
Several Stearns Model A Clippers.

H. G. RAPLEY
1429 Division St.
Port Huron, Mich. Ph. 20539

CONCRETE MANUFACTURER CLASSIFIED SECTION

FOR SALE

Lith-I-Bar two unit block machine, complete with offbearer and roller type block receiver. With 4", 6", 8" and 12" attachments and standard fractionals. Also 10 H.P. air compressor. Machine less than two years old. Reason for selling — installing larger equipment.

Write—Franzen Block and Material Corporation
2102 South Harding
Indianapolis, Indiana

PACKER-HEAD WINGS
Both McCracken Type and Martin Trowelers—PROVED to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE: 1 Kelley Air Stripper block machine A1 condition. All attachments and pallets for 4", 6", 8", 10" blocks.
1 Holland Cinder crusher, 10 to 20 tons per hour, A1 condition.
1 power or battery operated, and charger A1 condition.

PISCITELL BLOCK CO.
143 WEST BRIGHTON AVE.
SYRACUSE 5, N. Y.

FOR SALE

1 Multiplex, 1 Stearns Clipper A with pallets and crates for 4x8x12, 4x8x16, 8x8x12 and 8x8x16 with boxes. All available now.

ENTWISLE'S CONCRETE BLOCK
5290 Forestville Rd., Washington 19, D. C.
Phone Hillside 4252

FOR SALE

One hydraulic hand lift truck — like new. Capacity 3500 lbs. Price $175.00. For other details, write:

JOHN T. STOOPS
1291 Goshen Avenue Fort Wayne, Indiana
or call Anthony 9295, Fort Wayne

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

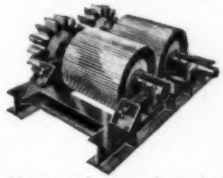
100,000
PRESSED STEEL PALLETS
In Stock

Send tracing or pallet for quotation.

GENERAL CONCRETE EQUIPMENT CO.
307 Hunter Street
Dept. PQ
Gloucester, New Jersey

CRUSHERS - VIBRATING SCREENS
CONVEYORS - SCALES - FEEDERS - IDLERS
GUARANTEED EQUIPMENT — IMMEDIATE SHIPMENT

CINDER, PUMICE, PERLITE CRUSHERS



10 to 20 tons per hour capacity....$ 431.00
25 to 50 tons per hour capacity.... 1029.00
Complete with hopper

HEAVY DUTY PLATE AND PAN FEEDERS

Complete with motor and drive.
Priced from $381.00

BUILD YOUR OWN CONVEYORS

We have standard sections, head and tail pulleys, take-ups, drives, idlers, speed reducers, sheaves, belting, etc.

3-roll Troughing Idlers for these sizes:

14" belt	$16.50	24" belt	$22.50
16" belt	17.25	30" belt	23.00
18" belt	21.00	36" belt	26.00
42" belt	$29.75		

1-roll Return Idlers for these sizes:

14" belt	$4.38	30" belt	$10.00
16" belt	6.75	36" belt	11.00
24" belt	8.75	42" belt	12.00
48" belt	$13.00		

All steel. Interchangeable with other well-known makes. Replaceable ball bearings. No bearing adjustments required. Easy to start and will run in cold weather. Rust-proof ball races; maintenance is negligible.

VIBRATING SCREENS

Heavy duty eccentric shaft types. One to five decks. Screening sizes from 3'x8' to 5'x14'. Priced from.....$1416.00

Screen cloth or plate included. Many smaller machines in stock. Screen cloth included. Prices start at $431.00.

Big Stock of cloth and plates.

Send us your want list.

TRUCK SCALES

15 Ton Truck Scales.....$518.00
20 Ton Truck Scales..... 586.00
26 Ton Truck Scales..... 650.00

Other scales to 50 ton capacity. All truck scales complete with structural steel weighbridge. Replacement parts for most all makes of scales.

PORTABLE CONVEYORS

Several in stock. Various widths and lengths in troughed belt, flat belt, and flight types. Gasoline and electric power. Some as low as $405.00.

HEAVY DUTY FLIGHT CONVEYORS

For high-temperature conveying as well as normal work. For lime and cement plants, kilns, lightweight aggregate furnaces.

Any length. Flights up to 8" x 24". All welded structural and sheet steel. Heavy duty, double guided chain.

Priced from $514.00

Also see our ad on page 192 of this issue

BONDED HAS GUARANTEED EQUIPMENT FOR QUARRIES, SAND & GRAVEL PRODUCERS, LIME PLANTS, LIGHTWEIGHT AGGREGATE AND CLAY-PRODUCTS PROCESSING. WE ALSO EQUIP CEMENT PLANTS & BLOCK MANUFACTURERS

WRITE FOR COMPLETE CATALOGUE AND PRICE LIST OF NEW BONDED EQUIPMENT. ALSO OUR BARGAIN LIST OF TRADEINS, DEMONSTRATORS, AND REPOSSESSIONS. REBUILT AND WITH NEW EQUIPMENT GUARANTEES

More than 3000 mines and quarries have modernized with Bonded equipment.

BONDED SCALE AND MACHINE COMPANY

PHONES: GArfield 2186; FRanklin 6-8898, Evenings.

110 Bellview **Columbus 7, Ohio**

FOR SALE

One Kelley air stripper block machine & parts including chimney pallets—one Blystone 18 foot mixer and skip hoist all complete with motors, etc. Can be seen in use. Immediate delivery. Also 3300 flat pallets 18x18x¼ f.o.b. Little Ferry.

HOFFMANN BLOCK CO., LITTLE FERRY, N. J.

UNBREAKABLE PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

BARGAINS

With New Equipment Guarantees. Immediate Shipment.

BONDED SCALES

SPECIAL #402

BONDED heavy duty motor truck scale, platform size 18' x 9', capacity 26 tons. This is complete with structural steel and weighing beam. New scale guarantee. Price is $920.00 new, and it is offered for $650.00.

SPECIAL #403

This is a new 30 ton scale with a 24' x 10' platform. We will not make this capacity scale in 24' platform sizes, and will close out this $1300.00 value for $950.00.

SPECIAL #404

BONDED heavy duty scale, model 2620B. The price new is $992.00. The platform size is 20' x 9' and the capacity is 26 tons. It is offered at $725.00 subject to prior sale, with a new scale guarantee.

SPECIAL #405

BONDED heavy duty truck dump scale, capacity 26 tons. Platform size 20' x 9'. New price is $992.00. A completely rebuilt trade-in, with new scale guarantee. It is offered at $675.00.

SPECIAL #408

BONDED heavy duty 2622B scale. Capacity 26 tons, with 22' x 9' platform. Carries new scale guarantee. Priced new at $1060.00. This is a bargain at $745.00.

SPECIAL #411

BONDED heavy duty motor truck scale, platform size 24' x 9', capacity 26 tons. New price is $1135.00. Our price to you is $795.00. It carries a new scale guarantee.

BONDED SCREENS

SPECIAL #419

BONDED screen similar to our 136A vibrating screen. It is a single deck screen with a 3' x 6' screening area. It is equivalent to a new screen. The customer used it a short while. It can be equipped with new screen cloth of whatever specifications the customer would specify. The price of a new screen is $665.00. This is offered at $445.00.

SPECIAL #420

BONDED totally enclosed screen similar to 238A. Two deck, 3' x 8'. One circular feed opening with spout at top; two pans underneath with circular discharge spouts. Top cover and pans are detachable. Ordered by a New Jersey chemical firm that went out of business quick. It never left our factory and we never got paid. New price $1103.00, offered at $685. Photos will be sent on request.

SPECIAL #421

BONDED general purpose screen, model 138A. One deck screen priced new at $787.00. Traded in on a heavy duty screen. In use less than one month. Offered at $550.00.

SPECIAL #422

BONDED heavy duty vibrating screen, model 3412B. A heavy duty eccentric shaft screen; 3 decks, 4' x 12'. Carries the same guarantee as new equipment and cannot be told from new. New price $2899.00. This bargain will go fast at $1999.00.

BONDED CONVEYORS

SPECIAL #431

New 1951 model BONDED 20' mobile conveyor with 16" diameter rubber tire wheels, 16" flat belt width, 19¾" frame. Complete with motor, drive and switch. Regular price $1095.00. Priced subject to prior sale at $895.00.

SPECIAL #432

BONDED 20' mobile conveyor 1951 model, with 16" diameter rubber tire wheels, 12" flat belt, motor, drive and switch. Frame width, 19¾". Used less than a week and traded in on a 30' long conveyor. Price new $955.00. A bargain at $785.00.

SPECIAL #433

BONDED Troughing Idlers—18", 24", 30" and 36". **Brand New!** Previous model.

18" Idlers	$18.00	30" Idlers	$19.50
18" Return Rollers	7.13	30" Return Rollers	7.77
24" Idlers	18.75	36" Idlers	21.00
24" Return Rollers	7.50	36" Return Rollers	8.25

These are 25% lower than the new models.

Also see our ad on page 191 of this issue.

BONDED HAS GUARANTEED EQUIPMENT FOR QUARRIES, SAND & GRAVEL PRODUCERS, LIME PLANTS, LIGHTWEIGHT AGGREGATE AND CLAY PRODUCTS PROCESSING. WE ALSO EQUIP CEMENT PLANTS & BLOCK MANUFACTURERS.

WRITE FOR COMPLETE CATALOGUE AND PRICE LIST OF NEW BONDED EQUIPMENT. ALSO OUR BARGAIN LIST OF TRADE-INS, DEMONSTRATORS AND REPOSSESSIONS. REBUILT AND WITH NEW EQUIPMENT GUARANTEES.

More than 3000 mines and quarries have modernized with Bonded equipment.

BONDED SCALE AND MACHINE COMPANY

PHONES: GArfield 2186; FRanklin 6-8898, Evenings. 108 Bellview Columbus 7, Ohio

Modern Block Plant For Sale

Over 40 years in business, located in central Michigan, equipment consist of new 2 block machine, 50' mixer directly above machine, Butler overhead bins, bulk cement, weighing batcher, lift trucks, steam kilns, new cinder crusher, Bulldozer, six trucks, two 4 wheel trailers, masonry saw, welders, etc. Concrete storage yard, new modern office, factory buildings, warehouse. This business could not be duplicated for less than $250,000. Asking price $145,000, plus inventory at time of sale. Wife's health necessitates moving south. If you are just curious please don't bother me. If you are honestly interested in a good sound profitable business I will be pleased to send you pertinent information. Terms can be arranged.

Write Box No. K-12, c/o Concrete Manufacturer
431 S. Dearborn Street, Chicago 5, Illinois

CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 24 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO.
71 Delevan St. Brooklyn 31, N. Y.

FOR SALE

Late Model Kelly Tamper
Air and Hydraulic operated.
8000 - 8 in., 4000 - 12 in., 4000 - 4 in.
Pressed Steel Pallet.
4 - 8 and 12 in. Mold boxes.
Spare parts.
Exhaust Fans. 11,200 cu. ft. per minute for Kilns and Cooling.

BOX NO. J-10, c/o Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Ill.

ENGINEER

Experienced in manufacture of Centrifugal Concrete Pressure Pipe. Permanent position in the fastest growing area of the Gulf Coast. Compensation commensurate with ability and past experience; excellent opportunity for advancement.

Give full details concerning past history, present position, family status, age, schooling, religious affiliation; enclose photograph. All information from correspondence or personal interview will be treated in strict confidence.

Box No. K-5
c/o Concrete Manufacturer
431 S. Dearborn St.
Chicago 5, Ill.

FOR SALE

JACKSON-CHURCH SIX POCKET BRICK PRESS

Good condition — Used but little. Is in our way and want to move it out — A Real Bargain

Chandler Materials Co.
Box 627 — Tulsa, Oklahoma
Phone 5-7256

SUPERINTENDENT WANTED

Man experienced all phases of Bituminous Asphalt manufacture, machinery and plant maintenance. Knowledge of quarrying and stone crushing useful — Eastern Massachusetts. Address inquiries to

Box No. E-22, c/o Pit and Quarry Publications
431 S. Dearborn St., Chicago 5, Ill.

FOR SALE
SLAG — CINDERS

Suitable for Manufacture of lightweight block. Unlimited quantity — f.o.b. Chicago, Illinois

Box No. J-11, c/o Concrete Manufacturer
431 South Dearborn Street, Chicago, Illinois

PUMICE AGGREGATE

- White Pumice Aggregate graded to any specifications in the Northwest's most modern processing plant.
- Low initial cost plus guarantee weights at 1200#/yd. with fully loaded cars means lower cost for pumice actually received.
- Immediate delivery.
- Sponsor of Pumice Research-Oregon State College.

THE CENTRAL OREGON PUMICE CO.
125 Oregon Ave., Bend, Oregon
Plant Ph. 275 Office Ph. 166
(Write or call for further information.)

FOR SALE

COMPLETE BLOCK PLANT. Columbia #8 Plain Pallet Machine Recently Installed. Large Southwestern City of 130,000 pop. All year operation. Established in 1945. Health reason for selling. Will sell equipment separate.

Box No. J-8, c/o Concrete Manufacturer
431 South Dearborn Street, Chicago 5, Illinois

YOURS TO SERVE

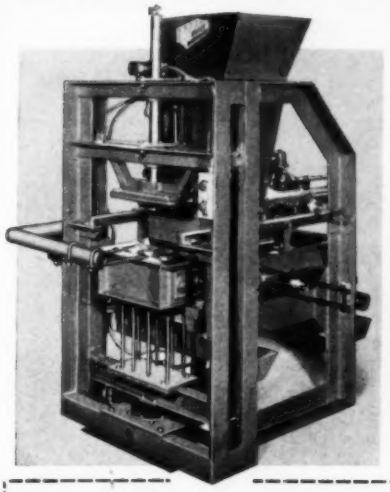
If you have not found the equipment you are looking for, the research dept. of The Concrete Manufacturer can and will gladly assist you. Tell us what it is . . . Write to

Research Dept.
C/O The Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Illinois

The BACKBONE of a THRIVING BLOCK BUSINESS

for a Comparatively Small Investment in the

KENT STANDARD BLOCKMAKER



Yes, we are ready to prove to you that the KENT STANDARD BLOCKMAKER will give you BIG OPERATOR advantages for a comparatively low investment.

It will enable you to sell against stiff competition and one operator alone can run this semi-automatic machine, producing up to 5 or 6 smooth topped blocks per minute from any aggregate—and at a low cost per block.

Labor and material costs continue their upward spiral. You can help "lick" this problem by installing one or more KENT BLOCKMAKERS.

Get full particulars by writing us today.

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO
Manufacturers of
CONCRETE PRODUCTS MACHINERY SINCE 1925

Send Blockmaker Literature to

Name _____

Address _____

City _____

PIT AND QUARRY

Research Department

431 So. Dearborn St., Chicago, Ill.

Please send me catalogs and Prices concerning the following items checked below:

- ☐ Admixtures, Concrete
- ☐ Agitators, Slurry
- ☐ Aggregate-Bituminizing Plants
- ☐ Air Cleaners
- ☐ Air Compressors
- ☐ Asphalt Mixing Plants
- ☐ Asphalt Mixers
- ☐ Bag Filling and Weighing Machinery
- ☐ Bags, Cloth
- ☐ Bags, Paper
- ☐ Balls, Steel
- ☐ Barges, Steel
- ☐ Batching Equipment
- ☐ Belt Dressing
- ☐ Belt Fasteners
- ☐ Belting, Conveyor and Elevator
- ☐ Belting, Transmission
- ☐ Belt Tighteners
- ☐ Bin Gates
- ☐ Bins
- ☐ Blasting Powder
- ☐ Blocks, Friction
- ☐ Bodies, Motor Truck
- ☐ Buckets, Clamshell
- ☐ Buckets, Conveyor and Elevator
- ☐ Buckets, Dragline
- ☐ Buckets, Orange Peel
- ☐ Cableways, Stackline
- ☐ Calcining Machinery
- ☐ Caps, Blasting
- ☐ Car Dumpers
- ☐ Car Pullers and Movers
- ☐ Carriers, Belt
- ☐ Cars, Dump
- ☐ Cars, Kiln
- ☐ Castings
- ☐ Cement Colors
- ☐ Cement Plants, Built
- ☐ Chains, Conveyor and Elevator and Dredge
- ☐ Chains, Power Shovel, Crane
- ☐ Chains, Transmission
- ☐ Classifiers
- ☐ Clutches
- ☐ Clutches, Magnetic
- ☐ Concrete Block Machines
- ☐ Concrete Brick Machines
- ☐ Concrete Joint Machines
- ☐ Concrete Stave Machines
- ☐ Concrete Plants, Ready Mix
- ☐ Cones, Washing
- ☐ Connectors, Wire Rope
- ☐ Conveyors, Apron
- ☐ Conveyors, Belt
- ☐ Conveyors, Concrete
- ☐ Conveyors, Screw
- ☐ Conveyors, Skip
- ☐ Coolers
- ☐ Coupling, Flexible
- ☐ Cranes, Locomotive
- ☐ Cranes, Overhead Traveling
- ☐ Cranes, Truck
- ☐ Crushers, Cone
- ☐ Crushers, Gyratory
- ☐ Crushers, Hammer
- ☐ Crushers, Jaw
- ☐ Crushers, Ring
- ☐ Crushers, Roll
- ☐ Cutter Heads, Dredging
- ☐ Derricks
- ☐ Draglines, Cableway
- ☐ Draglines, Revolving Boom
- ☐ Dredges, Hydraulic
- ☐ Dredges, Ladder
- ☐ Drills, Air
- ☐ Drills, Blast Hole
- ☐ Drills, Diamond
- ☐ Drills, Hand Hammer
- ☐ Drills, Sharpening Machinery
- ☐ Dryers, Rotary
- ☐ Dust Collecting Systems
- ☐ Dynamite
- ☐ Elevators, Bucket
- ☐ Engines, Diesel
- ☐ Engines, Gasoline
- ☐ Engines, Hoisting
- ☐ Explosives
- ☐ Feeders
- ☐ Filters
- ☐ Filters, Oil
- ☐ Fire Brick
- ☐ Frogs and Switches
- ☐ Fuses, Blasting
- ☐ Fuses, Detonating
- ☐ Gears
- ☐ Grease
- ☐ Grinding Balls
- ☐ Grizzlies
- ☐ Guns, Hydraulic
- ☐ Hardfacing Alloys
- ☐ Hoists
- ☐ Hoists, Skip
- ☐ Hose, Air, Water
- ☐ Hose, Suction
- ☐ Hydrators, Lime
- ☐ Idlers, Conveyor
- ☐ Kettles, Calcining
- ☐ Kilns, High Pressure Steam
- ☐ Kilns, Rotary
- ☐ Kilns, Vertical
- ☐ Lift Trucks
- ☐ Lime Putty Plants
- ☐ Lining, Kiln
- ☐ Loaders
- ☐ Loaders and Unloaders, Box Car
- ☐ Locomotives, Diesel
- ☐ Locomotives, Gasoline
- ☐ Locomotives, Steam
- ☐ Log Washers
- ☐ Lubricants
- ☐ Motors, Water
- ☐ Mills, Ball
- ☐ Mills, Compartment
- ☐ Mills, Tube
- ☐ Mixers, Concrete
- ☐ Molds, Concrete
- ☐ Motors, Electric
- ☐ Motor Trucks, Ready-Mixed Concrete
- ☐ Nozzles
- ☐ Nozzles, Spray
- ☐ Off Bearers, Pneumatic
- ☐ Oilers, Pallet
- ☐ Pallets, Concrete Block
- ☐ Perforated Plate
- ☐ Pipe, Spiral Welded
- ☐ Pipe
- ☐ Poidometers
- ☐ Pulleys, Clutch
- ☐ Pulleys, Magnetic
- ☐ Pulverized Fuel Systems
- ☐ Pulverizers, Ball, Conical, Pebble
- ☐ Pulverizers, Hammer
- ☐ Pulverizers, Ring
- ☐ Pulverizers, Rod
- ☐ Pulverizers, Roll
- ☐ Pumps, Centrifugal
- ☐ Pumps, Deep Well
- ☐ Pumps, Dredge
- ☐ Pumps, Slurry
- ☐ Rails
- ☐ Refractories
- ☐ Rolls, Crushing
- ☐ Rope, Wire
- ☐ Safety Appliances
- ☐ Saws, Masonry
- ☐ Scales, Batching
- ☐ Scales, Moisture Meter
- ☐ Scales, Track
- ☐ Scales, Truck
- ☐ Scrapers, Dragline
- ☐ Screens, Revolving
- ☐ Screens, Shaking
- ☐ Screens, Vibrating
- ☐ Separators, Air
- ☐ Separators, Dry Centrifugal
- ☐ Separators, Magnetic
- ☐ Shovels, Gasoline
- ☐ Shovels, Diesel
- ☐ Skips
- ☐ Sleeves, Dredge
- ☐ Slugs and Balls, Grinding
- ☐ Speed Reducers and Gears
- ☐ Sprockets
- ☐ Stokers
- ☐ Tanks, Concrete and Steel
- ☐ Tanks, Sand Settling
- ☐ Testing Equipment
- ☐ Thickeners, Slurry
- ☐ Track, Portable
- ☐ Track, Shifters
- ☐ Tractors, Crawler
- ☐ Tramways, Aerial
- ☐ Trippers, Belt
- ☐ Trippers, Tramway
- ☐ Unloaders
- ☐ Valves
- ☐ Vibrators, Electric
- ☐ Washers and Scrubbers, Sand, Gravel, Stone
- ☐ Weighers, Automatic
- ☐ Welding Machines
- ☐ Welding Rods
- ☐ Wheel Cars
- ☐ Winches
- ☐ Wire Cloth

Firm Name ..... *Individual* .....

Address ..... *City* ..... *State*.....

JONES COMPRESSION TESTING MACHINE

(Formerly Yoder)

often pays for itself in 3 to 4 months!

- Designed especially for use in Concrete Products and Ready Mixed Plants, this machine meets the essential requirements of the A.S.T.M. specifications for such machines.
- In many plants it has paid for itself in the first three or four months. By helping to develop more economical mixes, as well as to maintain greater uniformity, production cost has gone down, quality up.
- On-the-spot testing with facture examination help to quickly discover irregularities in proportioning, grading, molding, quality of aggregate, mixing and curing, and to apply the right remedy with the least delay and guesswork as to cause of trouble. Simple and safe to operate — full instructions with each machine.
  - Send for Bulletin, more fully explaining the advantages of doing your own testing with this inexpensive machine.
  - Also ask for Bulletin on the new *Jones Continuous Mixer*, incorporating non-clogging vibrating belt feeder and other important new features.

CONCRETE TESTING MACHINES • CONTINUOUS MIXERS

J. A. Jones CONCRETE MACHINERY CO.
108 HORNING ROAD • PITTSBURGH 34, PA.

Cure *better* block— at *lower* cost!

by stopping costly losses of heat and steam through kiln doors or covers that don't *really* seal and insulate. Your cost per block goes *down* when you stop pouring fuel $$$$$ into the open air. And you get *better block* too—because you get more uniform curing conditions throughout the kiln.

INSTALL *Uni-Temp* CURING ROOM DOORS
They *really* seal and insulate

rugged, all-metal, fully insulated!

Ask too about the *Universal* DOOR CARRIER
World-famous door handling equipment—since 1904

Write:
UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Ind.

NO OTHER OIL HYDRAULICS PERFORM LIKE "COMMERCIAL" OIL HYDRAULICS

CATALOG H-6 AVAILABLE ON REQUEST

Operating pressures recommended up to 1500 p.s.i.

THE COMMERCIAL SHEARING AND STAMPING COMPANY YOUNGSTOWN, OHIO

"COMMERCIAL"

now available!

BESLITE

for better
CONCRETE PRODUCTS

BESLITE, the superior lightweight aggregate that makes Marietta concrete tanks first choice for safe, durable, permanent storage of all raw bulk materials, can improve all your structural and precast concrete products. BESLITE-made concrete is light, strong, uniform, smooth-textured, fireproof, acid resistant and has excellent accoustical and insulating properties. Marietta, now, makes BESLITE available to all concrete products manufacturers and ready-mix concrete producers . . . in two sizes—⅛" to #4 and minus #4—by truck, rail or barge shipment within 300 miles.

For the best in industrial storage systems, insist on MARIETTA. For better concrete products, use BESLITE, by MARIETTA.

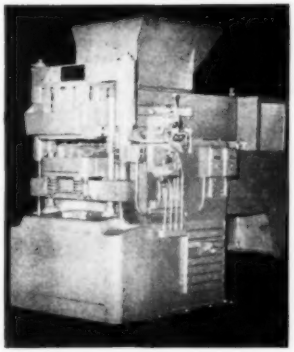
Write for full details

THE MARIETTA CONCRETE CORP.
MARIETTA, OHIO • BALTIMORE, MD. • CHARLOTTE, N. C.

YOU'LL MAKE MORE BLOCKS WITH A *Columbia!*

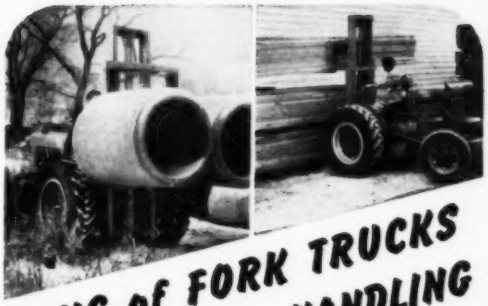
HERE'S WHY

- PLAIN PALLETS
- VIBRATION PLUS COMPRESSION
- 4-6 AND 8 INCH HIGH BLOCKS
- 4 TO 6 PALLETS PER MINUTE
- OIL HYDRAULIC
- ANY TYPE OF AGGREGATE
- AUTOMATIC OR SEMI-AUTOMATIC



Write home office for name and address of sales representative in your area.

Columbia MACHINE WORKS
105 MAIN STREET • VANCOUVER, WASHINGTON



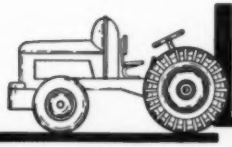
KING of FORK TRUCKS For OUTDOOR HANDLING

NOW YOU CAN HANDLE HEAVY LOADS "IN THE ROUGH!"

Only Tracto-Lift can handle materials *anywhere*, even on rough, unpaved ground. This extraordinary fork lift truck has over-size pneumatic tires, basic tractor transmission, ample underneath clearance. Makes possible greater traction, roadability and work capacity. Store materials outside on any ground in any weather, with Tracto-Lift!

SPEED HANDLING, CUT COSTS!

Tracto-Lift speeds materials handling! You can handle materials at the higher speeds of industrial tractors and even climb inclines up to 20%. As the load weight is increased, steering ease increases. Maximum maneuverability under all conditions. Tracto-Lift cuts handling costs! First cost is low, operation economical. Tracto-Lift is based on a *standard* industrial tractor; parts and service are available throughout the world. A complete line of versatile attachments is available. Write now for illustrated brochure, full information and name of your nearest dealer.



TRACTO LIFT Company
2011 BALTIMORE
Kansas City 8, Mo.

Because the market is broad, profits big, and investment moderate, you ought to manufacture

CHAMPION DRAIN TILE

Millions of drain tile are used every year for farm drainage alone. Other huge quantities are used for road building, reclamation projects and other purposes. More millions are needed if supply is to keep pace with demand.

Men already in the concrete product industry are in ideal position to make Champion drain tile. It's an activity that dovetails with block making. Utilizes time, space and equipment that might otherwise be idle. Doesn't require a large investment.

Champion cement tile is made by local plants, using local materials and local labor. No baking costs. No freight costs. No distribution costs. That's why local Champion manufacturers can save money for tile users and make generous profits for themselves.

Equip with Champion for Efficient Operation and Profitable Production

The Champion is compact, sturdy and easy to operate. Makes the finest drain tile on the market: "So dense—so firm—so fully packed." Every one a true concentric. Every one ribbed for extra strength.

Double compacting—first by packer shoes, then by a swiftly rotating packer head—results in a dense, strong and smoothly troweled unit.

The Champion makes all the popular sizes up to 12 inches in diameter. All 12 inches long.

The new Champion Automatic Feeder (optional equipment) reduces drain tile manufacture to a one-man operation. Operated entirely by electrical controls. Easily and quickly attached to production machine.

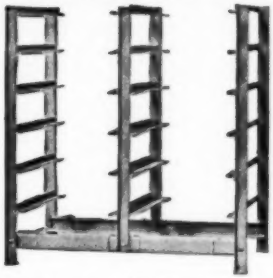
Write for Champion literature. Gives interesting information on cement drain tile business and describes the Champion equipment.

Concrete Equipment Co.

532 Ottawa Ave.
Holland, Michigan

CHASE BLOCK RACKS, CARS, PALLETS

Corrosion-Resistant Hi-Strength Alloy Steel



For Fork or Platform Lift Trucks

CHASE — THE LAST WORD IN

- ***DURABILITY***
- ***ECONOMY***
- ***EFFICIENCY***

Sturdy construction
•
any style or capacity
•
Shipped knocked down
•
Rigid Field connections
•
assembled Easily

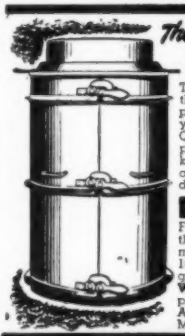
CHASE Foundry & Mfg. Co.
COLUMBUS 7, OHIO

NOW MORE THAN 120 *LICENSED MANUFACTURERS Producing*

Patented
homeward *Concrete* STEPS
A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.
For Complete Information Write
ROGER F. WILLIAMS, Licensor
3420 S. W. 9th St. Des Moines (15), Ia.



The "Quinn Standard"
FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

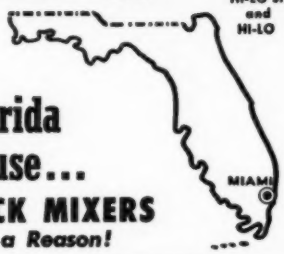
WRITE TODAY. Complete information, prices, and estimates sent on request. Also manufacturers QUINN CONCRETE PIPE MACHINES.

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IOWA

MEETING LOAD LIMITATIONS WITH HIGH CAPACITY

5 OUT OF 6

Large Producers of Ready Mixed Concrete in the Miami, Florida area Now use...



HI-LO Jr. and HI-LO

HI-LO TRUCK MIXERS

There Must be a Reason!

CONCRETE TRANSPORT MIXER CO.

Phone Flanders 7800

4989 FYLER AVE. • ST. LOUIS 9, MO.

Serving the CONCRETE INDUSTRY 20 YEARS

RUBBER-TREADED!

Wears and grips like a tire

Grab-it

OUTWEARS 5 TO 10 PAIRS ORDINARY GLOVES

Tough Natural Rubber over *palm and thumb. Far outwears costlier leather.*

Sure Grip: *Rough surfaced rubber firmly grips bags, brick, glass, cement block, sheet metal, lumber — wet or dry.*

Strong Fabric Lining and back *— comfortable as a canvas glove. Very flexible.*

Easy To Slip On Or Off: *Safety cuff, gauntlet or knitwrist — rubber coated palm or completely waterproof styles.*

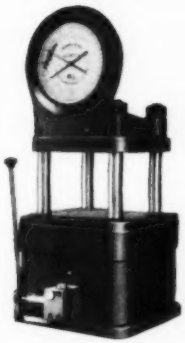
Double-palm glove, worn out laying 3000 fire bricks.

This Grab-it laid 15,000 bricks for the same worker.

FREE TEST OFFER. Send for sample gloves for on-the-job test . . . to improve safety and cut glove costs 40% to 70%.
Write, on your business letterhead, merely stating your job operation, materials handled and temperature condition. Without cost we will send you samples of the type glove best suited for your operation and simple guide for testing them on the job.

Edmont Mfg. Co., 1208 Walnut Street Coshocton, Ohio

World's largest manufacturers of coated industrial gloves



the FORNEY *Compression* TESTER

Sells Your Products - - - Increases Your Profits

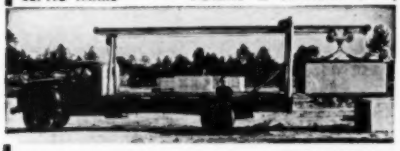
Whether you produce concrete building units, concrete products or just concrete — daily testing will increase yields, profits and customer confidence.
The FORNEY direct reading gauge makes daily testing easy and profitable.

Write for complete information

FORNEY'S inc. 203 ELM STREET · NEW CASTLE, PENNSYLVANIA

TODAY'S METHOD for making SEPTIC TANKS

CARPENTER FORMS & HANDLING EQUIPMENT



Used from COAST TO COAST

Experienced concrete producers specify CARPENTER Equipment because it speeds up all operations . . . cuts time and labor costs . . . makes a quality product meeting specifications everywhere. Only one man needed for delivery. Write for details.

CARPENTER MANUFACTURING CO.

Phone 22018 R.F.D. No. 1, Box 470, Richmond, Virginia

All-welded ELEVATOR BUCKETS

light • durable • quick cleaning

For maximum elevator capacity with minimum h.p. requirements, use Johnson cement and aggregate buckets. All-welded steel, with heavy-gauge lips and ends, they're light, durable, smooth for fast filling, quick cleaning. Three sizes cement: 10x6", 12x7", 14x8" . . . 4 aggregate: 10x6", 12x8", 14x8", 16x8".

Long-life steel chain has carburized steel knuckles, medium carbon steel side bars, welded bucket lugs, alloy heat-treated ⅜" pins. You'll find that carburized steel parts last longer than malleable iron.

Mail to C.S. JOHNSON CO. Champaign, Ill. *(Koehring Subsidiary)*

Send information on: ☐ buckets ☐ elevator chain for _____ (type of material)

NAME _____ CO. _____

STREET _____

CITY, STATE _____ J243PQ

Cure concrete block at lower cost

The Paturzo plants in Baltimore prove it can be done with HEATED AIR from

THERMOBLOC

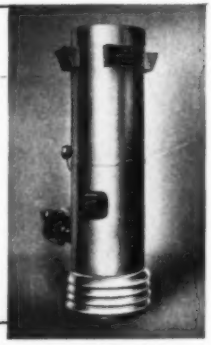
SELF-CONTAINED DIRECT-FIRED HEATERS!

Among the nation's large concrete block manufacturers, V. Paturzo Bros. & Son, Inc., of Baltimore, Md., is one of the most adept at devising ways to reduce production costs and still keep product quality high. Take block curing, for example. This firm uses heated air from THERMOBLOC Direct-Fired Heaters and reports excellent results in block curing.

THERMOBLOC has proven itself highly efficient in this type of application in addition to its wide use in heating open-space buildings. This fully self-contained unit is easy on fuel; transfers heat direct from burning oil or gas to air stream, through one thickness of metal. It is of rugged boiler-type construction and equipped with latest automatic controls that assure accurate heating cycles for block curing. Easy to install inside or outside the curing room.

● One THERMOBLOC provides the heat for approximately 20,000 standard 8's

One of the types of two 550 BTU oil-fired THERMOBLOCS in Paturzo Plants No. 2 and No. 3 curing room, where a full day's output of concrete block is cured overnight. Heated air from the THERMOBLOCS is gently circulated through the room and raises temperature to 100-110 deg. F. No live steam is used. Taps in quality, concrete blocks from the kiln meet all local and State specifications. THERMOBLOC is available in stock models for 100,000 to 1-million Btu/hr. output; larger sizes on special order. For the full facts, mail coupon today.



THERMOBLOC DIVISION

PRAT-DANIEL CORPORATION

#15-4 Meadow Street, South Norwalk, Conn.

Manufacturers of P-D Power Equipment

Please send me details on thrifty THERMOBLOC.

Name_____ Title_____

Company_____

Address_____

INDEX TO CONCRETE MANUFACTURER SECTION ADVERTISING

*Besser Mfg. Co. 199
Agency—Paulson-Gerlach & Assoc.

Bonded Scale & Machine Co. 191, 192

Butler Bin Co. 181
Agency—Davis-Greene Corp.

Carpenter Mfg. Co. 197

Chase Foundry & Mfg. Co. 196

Clark Equipment Co. 178
Agency—Marsteller, Gebhardt & Reed, Inc.

Cook Bros. Equipment Co. 152
Agency—Houston Advertising Service

Columbia Machine Works 195
Agency—Ray Carr Organization

Commercial Shearing & Stamping Co. 194

Concrete Equipment Co. 188, 196
Agency—Simmonds & Simmonds, Inc.

Edmont Mfg. Co. 197
Agency—Mumm, Mullay & Nichols

Eighmy Equipment Co. 190

Fleming Mfg. Co. 197
Agency—Christy Humburg, Adv.

Forney's, Inc. 197
Agency—Danford Studio

Francis Steam Generator Co., Inc. 181

*Fuller Co. 185
Agency—O. S. Tyson & Co., Inc.

Heltzel Steel Form & Iron Co. 187
Agency—Meek & Thomas, Inc.

Horn Co., Inc., A. C. 183
Agency—J. D. Tarcher & Co.

Houston Concrete Machinery Co. 186
Agency—W. L. Culver, Adv. Service

*Hyster Company 189
Agency—Simon & Smith

International Harvester Co. of America 184
Agency—Young & Rubicam, Inc.

Jaeger Machine Co. 176, 177
Agency—Mumm, Mullay & Nichols

*Johnson Co., C. S. 197
Agency—Andrews Agency

Jones Concrete Machinery Co., J. A. 194
Agency—G. M. Basford Co.

Kent Machine Co. 193
Agency—T. H. Ball & Sons

Marietta Concrete Corp. 195
Agency—Harry M. Miller, Inc.

Master Builders Company 200
Agency—Bayless-Kerr

Maxon Construction Co. 179
Agency—Yeck & Yeck

*Multiplex Machinery Corp. 186
Agency—A. Hemsing

National Conveyor & Supply Co. 166
Agency—Richard F. Johnson, Adv.

Olsen Corp., Gene 190
Agency—Fred P. Bingham

Oswalt Engineering Service Corp. 188
Agency—Wamsley & Heer, Inc.

Prat Daniel Corp. 198
Agency—Hening & Co.

Quinn Wire & Iron Works 196
Agency—Lessing Adv. Co., Inc.

Rehberger & Co., A. 175
Agency—United Adv.

*Smith Co., T. L. 182
Agency—Paulson-Gerlach & Assoc.

*Stearns Manufacturing Co. 149
Agency—Beeson-Reichert, Inc.

Supremix, Inc. 190
Agency—Fred P. Bingham

Tracto-Lift Co. 195
Agency—Merritt Owens, Adv.

Unit Crane & Shovel Corp. 180
Agency—Paulson-Gerlach & Assoc.

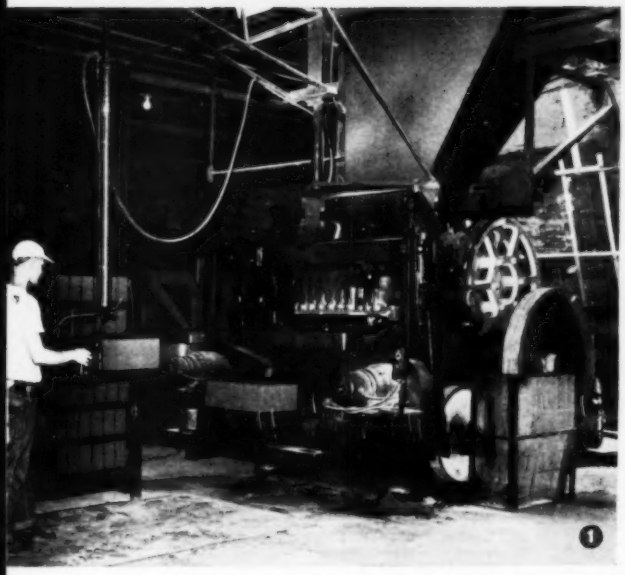
Universal Atlas Cement Corp. 150
Agency—Batten, Barton, Durstine & Osborn

Universal Door Carrier 194
Agency—Jack A. Hunter, Adv.

Williams, Roger F. 196

*See also Detailed Information in 1951 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

Another Leader IN THE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS!



J. H. Hankins, J. L. Hankins and C. G. Paulson, executives of the Hankins-Paulson Co., Uniontown, Penna.

"High Production and Quality Block . . . Since We Installed a Besser Vibrapac"

This is part of a statement made by the officials of the Hankins-Paulson Company at Uniontown, Penna. In the block business since 1922, the company is now operating their block plant at Denbo, Penna. on the Monongahela River.

At the time Hankins-Paulson started to expand, they installed Besser equipment and the Vibrapac replaced two smaller machines. The performance of this machine has proven entirely satisfactory and the units produced are of the highest quality. Continuous high production, day in and day out, plus the advantages of making all units on a Besser Plain Pallet Vibrapac and quick, easy attachment change has influenced the Hankins-Paulson Company in planning to install another Vibrapac in the near future.

BESSER MANUFACTURING CO.

Complete Equipment for Concrete Products Plants

ALPENA, MICHIGAN, U. S. A.

1 Besser Vibrapac installed in the Denbo plant of the Hankins-Paulson Co. Produces six 3⅝ x 7⅝ x 15⅝" units at a time on one Plain Pallet. Continuous capacity operation. No machine operator required. Pallets are fed automatically.

2 Exterior view of the Hankins-Paulson plant located on the Monongahela River at Denbo, Penna.

3 Besser Block Cuber in use at the Denbo plant. This company like many other Vibrapac plants finds this power tool highly profitable and labor saving, as it cubes the product of the pallet by power, eliminating outmoded hand lifting of block.

LABOR SAVING POWER BLOCK CUBING IS BECOMING STANDARD PRACTICE IN VIBRAPAC PLANTS. WRITE FOR DETAILS.

★ This is the 92nd of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

BESSER

BATCH MIXERS | SKIP LOADERS | BLOCK & BRICK CUBERS | SUPER VIBRAPAC | SINTERING PLANTS | ACROW CENTERS | ROOF TILE MACHINE

City Park Garage, Pershing Square, Los Angeles, Calif.; Archt. Stiles Clements, Associated Architects & Engineers; Consltg. Engr.—Murray Erick Associates; Contrs.—Ford J. Twaits Co.; Morrison-Knudsen Co., Inc.; and T-S Construction Engineers, Inc.; 50,000 Cu. Yds. of Pozzolith Ready-Mixed Concrete Supplied by Graham Brothers. All companies of Los Angeles, Calif.

POZZOLITH READY-MIXED CONCRETE In World's Largest Underground Garage

To a long list of outstanding structures built with Pozzolith Ready-Mixed Concrete has been added this 2000-car underground garage.

Use of Pozzolith Concrete assured designed strength . . . also resulted in quicker re-use of slab shoring material — reducing costs and speeding up work; good concrete surface — holding down finishing cost of slabs.

Pozzolith's cement-dispersing, water-reducing and air-entraining action (making available the optimum amount of air) produces these further benefits:

1. Reduced Shrinkage — for less cracking.
2. Lower Permeability — for less "waterproofing". . . later.
3. Increased bond-to-steel — for better construction.
4. Greater Durability — for lower maintenance costs.

Full information and Pozzolith booklet on request.

Over 600 Leading Ready-Mixed Plants Are Producing Pozzolith Ready-Mixed Concrete

Over 600 Leading Ready-Mixed Plants are now equipped with the POZZOLITH AUTOMATIC DISPENSER

Here's Why...

Because a producer can, at lower cost:

1. Produce concrete of low permeability . . . with normal Portland cement.
2. Produce high-early strength concrete . . . with normal Portland cement.
3. Produce air-entrained concrete without strength loss . . . with normal Portland cement.
4. Produce all of the above properties out of one cement bin . . . with normal Portland cement — stepping up production; reducing inconvenience in handling and cutting costs.

•

In normal mixes, concrete of any given durability, strength and workability, is produced more economically with Pozzolith than by any other means.

the MASTER BUILDERS Co.

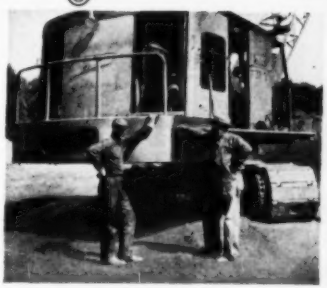
CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO

GM Diesel
Case History No. 728-53

USER: Brown Coal Co.,
Center Point, Indiana

INSTALLATION: 38B Bucyrus-Erie 1½ yd. dragline powered by Model 6-71 GM Diesel.

PERFORMANCE: Owner reports stripping 3500 yards overburden per 10-hour day, using 3 gallons of fuel per hour. Mine produces up to 280 tons of coal per day.



THIS DIESEL

strips 350 yards an hour on 3 gallons of fuel

Co-owner K. W. Brown says, "This rig came with a General Motors Diesel and we're plenty happy that it did. Couldn't ask for better power both on this machine and the HD-10 tractor on which we've put 2000 hours in 6 months." Because of its efficient, quick-acting 2-cycle operation, the GM Diesel engine gets more work done at lower cost in all kinds of mining equipment — draglines, shovels, trucks, tractors, locomotives, compressors and generators. Ask your nearest GM Diesel distributor for the complete story.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS, DETROIT 28, MICHIGAN

It pays to Standardize on

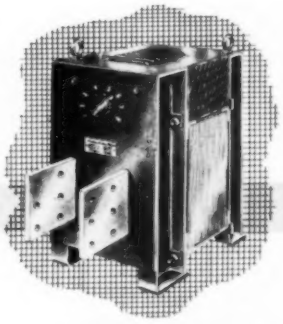
GM
GENERAL MOTORS
DIESEL POWER

NEW QUICK-CHANGE ATTACHMENT SPEEDS CHANGES AND REPLACEMENT OF ELECTRICALLY-HEATED SCREENS

Since their introduction in 1946, Hanco Electric Screen Heaters have saved clay products manufacturers thousands of dollars by speeding screening of moist clay—lessening "returns" to the pan for regrinding—eliminating the labor and screen wear occasioned by "beating" to clean clogged mesh.

Now, Hannon, pioneer of electric screen-heating, offers additional savings with the new Quick-Change Attachment which makes operating screen changes and worn-screen replacements as quick and simple as they are with unheated screens. Original installation time is also greatly reduced since it is no longer necessary to bolt copper bars to the screen cloth. Furthermore, the bus bars are shielded against abrasion and long, unwieldy cables are eliminated.

Applicable to all makes of screens, Hanco's new Quick-Change Attachment can be used with all existing electric screen heaters, as well as for new installations.



Hanco THE PIONEER ELECTRIC SCREEN HEATER

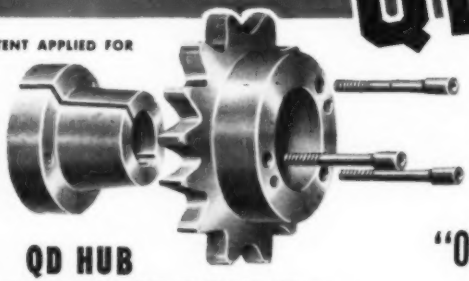
F. R. HANNON & SONS • CANTON 5, OHIO

Engineers • Since 1900 • Manufacturers

FORT WORTH QD ROLLER CHAIN SPROCKETS

WITH TAPERED SPLIT HUB

PATENT APPLIED FOR

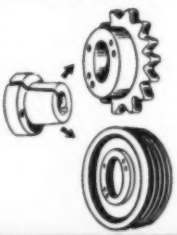


ELIMINATE REBORING!

QD HUB ALSO FITS QD V-Belt Sheave

Speed changes are simplified and "spare" sprockets can be carried more easily.

If your favorite distributor doesn't stock this new item, tell him about it. He'll reward you with better service.



"OFF THE SHELF" SERVICE AVAILABLE FROM INDUSTRIAL DISTRIBUTORS

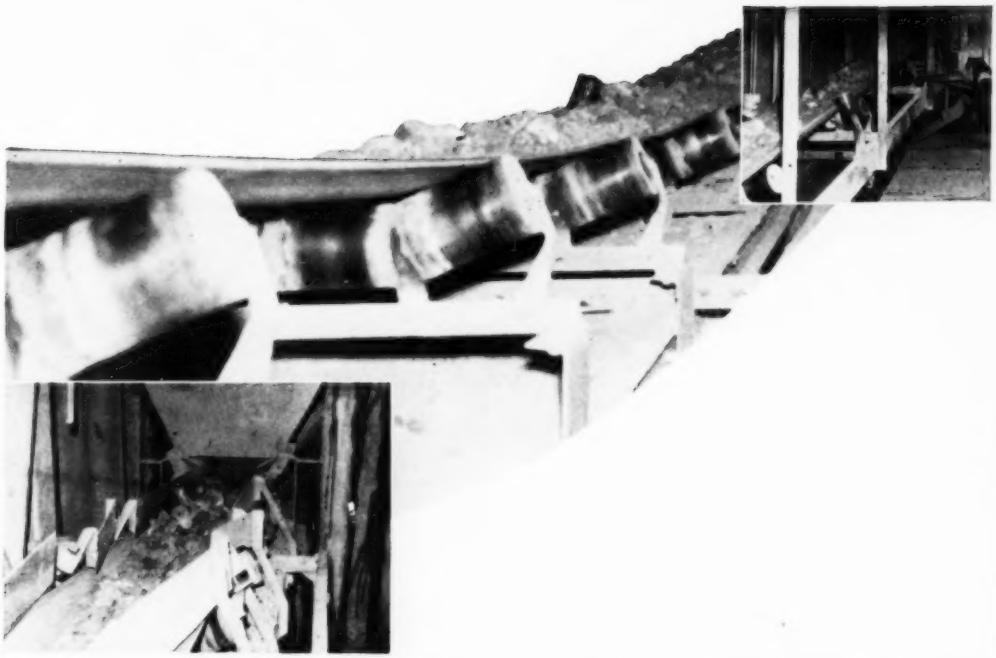
Reboring of stock bore sprockets to fit various shafts is eliminated due to the various bores available in the QD hub. Installation and removal from the shaft is made easy by the tapered fit of the hub and sprocket. Hub assembly grips the shaft equivalent to a "press fit."

WAREHOUSES: CHICAGO, LOS ANGELES, ST. LOUIS, KANSAS CITY, MEMPHIS, CINCINNATI, NEW YORK, HOUSTON, ATLANTA

FORT WORTH STEEL & MACHINERY CO.

Dept. 254 3600 McCart Street FORT WORTH, TEXAS

OTHER FORT WORTH PRODUCTS: V-BELT DRIVES, SCREW CONVEYORS and ACCESSORIES, SCREW ELEVATORS, INDUSTRIAL FANS



REPUBLIC CONVEYOR BELT SAVES HANLEY COMPANY 93% belt replacement cost.

● Hanley Company operates a modern tile and brick-making plant in Summerville, Pa. Basic ingredient of their product is hard, abrasive fire clay. The clay is dumped into a primary crusher at the tipple, and then moved on Republic Conveyor Belting to a scalping screen, where the fines are separated from coarser lumps and dropped into storage bins preparatory to pugging, extrusion and baking.

A single 504-ft. length of 20-inch wide Republic Super Excelo Conveyor Belt handled the entire job (carrying more than 1,625,000 tons of material without mishap) for a 10-year period. Then, in July of 1948, the company installed some new production equipment and the old conveyor system became 18 feet too short. It seemed like an ideal time for belt replacement, but —

"Nothing doing!" said Charles E. Bates, Vice-president in Charge of Production. "The original belt had a perfect performance record and was in excellent condition. Ten years' service out of a Republic Belt didn't seem unusual. I simply ordered an extra 36-foot section of the same type Super Excelo Belting and had it spliced in position. That was four years ago. I saved 93% of the total replacement cost and the belt's still rolling along as good as ever!"

Yes, Mr. Bates, we expect it is. Many Republic Rubber Conveyor Belts and other Industrial Rubber Products have been in use for a quarter of a century and more. But we appreciate such loyalty and enthusiasm. As the leading specialized producer of Industrial Rubber Products, Republic will continue to offer more performance for less money.

Remember, if it's made of rubber, Republic builds it better. Contact your local Republic Distributor or write direct for a free analysis of your plant requirements.

INDUSTRIAL RUBBER PRODUCTS BY
REPUBLIC RUBBER DIVISION
Lee Rubber & Tire Corporation
YOUNGSTOWN, OHIO

IT'S TIME . . .

again . . .

TO WAKE UP SCRAPPY!

Scrap's getting scarce again . . . compared to the amounts we need . . . and it's up to *all* of us to *help* produce enough steel.

107,000,000 tons of steel is the present rate of production in 1951 . . . 119,500,000 tons is expected in 1952.

Last year, 1950, we produced 97,800,000 tons.

All that extra steel—enough to take care of *both* military and civilian needs—calls for *more scrap iron and steel.*

Scrap Inventories Are Alarmingly Low

While steel mills are producing at a greater rate than ever, scrap inventories have dwindled. Many mills are operating on a hand-to-mouth basis with shut-downs threatened unless we furnish more scrap.

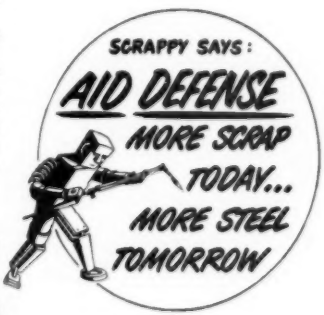
We *do* have the scrap. It's everywhere, not just in the form of *production* scrap—the "leavings" of machining, normally turned over to scrap dealers . . . but also in the form of *idle* metal: obsolete machines and tools, no-longer-usable jigs and fixtures, gears, chains, pulleys, valves, pipe, abandoned steel structures, etc.

We must have this *idle* metal to keep the furnaces running.

Please cooperate. Set up a Scrap Salvage Program in your plant—*now.* For a complete plan on "how to do it", write for booklet "Top Management: Your Program for Emergency Scrap Recovery". Address Advertising Council, 25 W. 45 Street, New York 19, N. Y.

Why Do We Need *Scrap?*

Steel is made half from pig iron, half from scrap. With production on the increase, more scrap must be purchased. And it's up to you to "dig it out" and sell it.



NON-FERROUS SCRAP IS NEEDED, TOO!

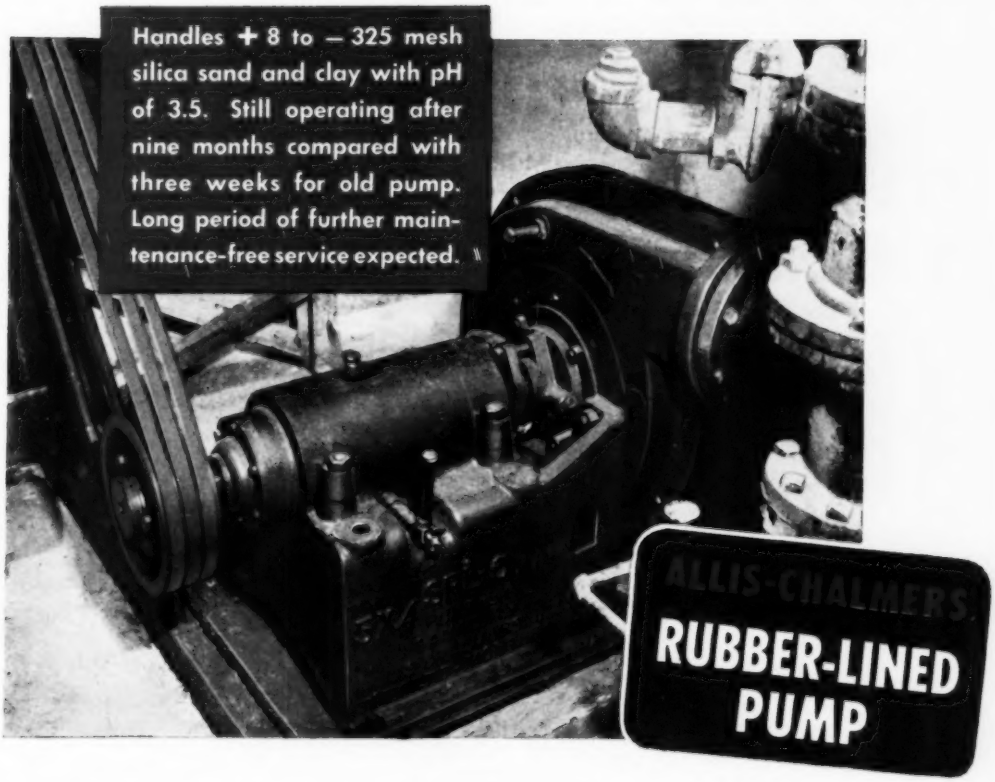
This advertisement is a contribution, in the national interest, by

PIT AND QUARRY

A PUBLIC SERVICE PROJECT THE ADVERTISING COUNCIL

13 TIMES LONGER LIFE

— THAN PREVIOUS PUMP!


Handles + 8 to — 325 mesh silica sand and clay with pH of 3.5. Still operating after nine months compared with three weeks for old pump. Long period of further maintenance-free service expected.
ALLIS-CHALMERS
RUBBER-LINED PUMP

PUMPING WASTE FROM degritting operations in a Georgia clay pit wore out a high grade alloy pump every three weeks. This Allis-Chalmers SRL Rubber Lined Pump has been in operation over nine months without requiring any maintenance due to wear. And wear is so slight that no estimate can be made of its eventual useful life.

Such reliability and long wear make any pumping operation more profitable and are particularly important in 24 hour, 7 day operations like this one.

Up to 50 times the wear life of the highest grade alloy pumps is not uncommon where the Allis-Chalmers Rubber Lined Pump has been used to pump fine abrasive suspensions.

SPECIAL RUBBER COMPOUNDS

Rubber lining compounds are especially engineered for each application. Linings are bonded to separate steel frames and not to the pump body, so they may be replaced without removing the pump from its location. The impeller is equally easy to remove and replace.

If you are pumping fine mesh, hard, abrasive materials (⅛" to 325 mesh size), find out how much more life you will get from an Allis-Chalmers Rubber Lined Pump and how it will reduce your cost per gallon pumped on tough operations. Ask your nearby Allis-Chalmers District Office representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin and ask for Bulletin 08B7311. A-3536

ALLIS-CHALMERS

Cuts Costs

to Rock Bottom

You save on operating costs when you put an efficient Oliver power unit to work in your quarry . . . and all other jobs that call for brisk, steady power.

For there's a choice of distinct Oliver engines for the fuel most economical for you to use—thrifty overhead valve units for gasoline or LP-gas, and an easy-to-start diesel that responds quickly in cold weather.

Further, you can pick the unit that fits your exact power requirements. Oliver builds engines in four capacities. Champion power producer of the group is the great new 73-horsepower, 6-cylinder "199." Next in line is the rugged 6-cylinder "188," developing up to 58 horsepower. The husky 6-cylinder "177" delivers up to 48.5 horsepower, and the peppy 4-cylinder "166" up to 31 horsepower.

All four Oliver power plants are equipped with metered oil systems that keep consumption at a nearly constant level despite wear . . . by-pass cooling systems . . . big, precision-type bearings . . . wet cylinder sleeves that are quick and easy to remove and replace. If you're considering the installation of a power unit for any purpose, consult your neighborhood Oliver dealer—first! The OLIVER Corporation, 400 West Madison Street, Chicago 6, Illinois.

OLIVER

"FINEST IN FARM AND INDUSTRIAL MACHINERY"

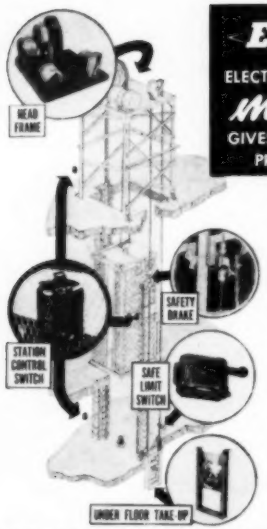
THE OLIVER CORPORATION T10-4
400 West Madison Street, Chicago 6, Illinois

Please send me literature on *Oliver Power Units*.

Name .....

Address .....

Post Office ..... State .....



EHRSAM
ELECTRIC
manlift
GIVES WORKMEN MORE PRODUCTIVE TIME

CARRIES them swiftly and safely from floor to floor, increases plant efficiency, and saves the worker's time.

The Ehrsam electric manlift has a rugged, all-steel cage, steel head frame, a smoothly operating drive unit and worm gear reducer unit.

Safety features include positive stopping magnetic brake, limit switches and cable speed governor.

The EHRSAM electric manlift is made in 300 and 500 lb. capacities. With wood or steel guides.

ADDRESS INQUIRIES TO DEPARTMENT P

THE J. B. EHRSAM & SONS MFG. CO.

ESTABLISHED 1872 • ENTERPRISE, KANSAS, U.S.A.

ARMSTRONG-BRAY

GEAR and WHEEL PULLERS

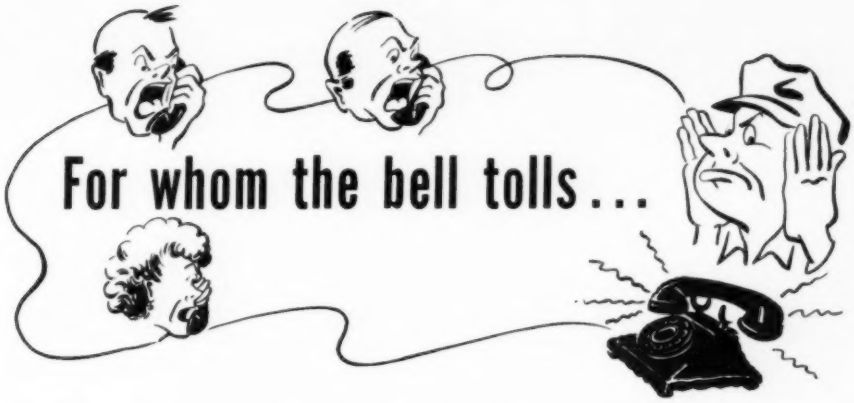
Quickly and easily pull gears, wheels, pulleys and bearings off of shafts without damage or breakage.

Improved designs make them easy to set up and safe in use—the harder the pull the tighter the grip.

12 types, 40 sizes—2-arm, 3-arm, standard and special STEELGRIP Pullers with drop forged arms and heat treated screws as well as CHAINGRIP Universal Pullers that reach to considerable distances from end of shaft.

Write for Catalog

ARMSTRONG-BRAY & CO.
5394 NORTHWEST HIGHWAY
CHICAGO 30, U.S.A.



The telephone bell tolls loud and long for quarry and stripping operators whose blasting creates excessive noise and vibration. Neighbors often threaten to ring the bell for good on future operations.

Generally, it is the "air blast" (air vibration) which irritates the neighbors. By longer confinement of the explosives force of a blast, the ROCKMASTER System practically eliminates this noise . . . uses the full power of the blast to break rock.

Some operators have found that they can greatly increase the size of their blasts and at the same time end the neighbors' complaints by switching to the ROCKMASTER System. To see how *you* can disturb more rock without disturbing your neighbors, send for your free copy of the 20-page ROCKMASTER book today.

ATLAS EXPLOSIVES

ATLAS

"Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE

Offices in principal cities

1 Here are eight holes ready to shoot. ROCKMASTER milli-second delay detonators are at the bottom of each hole to start action on the toe. This gives maximum confinement of explosives gases and thus minimizes air blast.

2 The only sound heard here was a dull rumble. The toe can be seen clearly moving out first. The confined power of the explosives plus the one-two punch of milli-second delays assures good fragmentation and *controlled* throw.

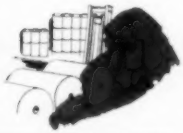
3 This is the height of the blast. There still are no escaping gases. The only large boulders are those few which were at top of the face and away from the twisting action of the milli-second delays. Remainder of rock is bite-size.

4 Here's the pile ready for the shovel. Bulk of rock is properly distributed. Face along line holes shows little or no backbreak. Another example showing that ROCKMASTER disturbs rock but not neighbors.

Behind
HAMMOND
Multi-Wall
BAGS

. . . are the features illustrated plus a thorough understanding of your shipping bag requirements

The preference for Hammond Multi-Wall Bags continues to grow steadily because of an ever-increasing list of satisfied customers in the cement, rock products and every industry where Multi-Wall Bags are used.



★ HIGHEST QUALITY PAPERS AND MATERIALS

★ PLANT EFFICIENCY

★ MODERN MACHINERY

★ PRIDE OF WORKMANSHIP

Write today for your copy of our booklet—
"To Serve You Better
with Hammond Multi-Wall Bags"

HAMMOND BAG & PAPER COMPANY

General Offices: Wellsburg, W.Va. *Plants in* Wellsburg, W.Va. and Pine Bluff, Ark.

Representatives in the following Cities:
Chicago, Ill. Minneapolis, Minn. New York, N. Y. Bluefield, Va. Columbus, Ohio
Charlotte, N. C. Ligonier, Pa. Houston, Texas Kansas City, Mo. Baltimore, Md.

UNIFORMLY ACCURATE SIZING

You assure uniform accuracy of sizing when you use Hendrick Perforated Plate on your vibrating and shaking screens. For highly abrasive materials the plate is heat-treated to increase its toughness and minimize wear.

The full clearance practically obviates clogging, while the ease and rapidity with which decks can be changed is another factor in keeping down screening costs.

With any desired shape and size of perforations, Hendrick Perforated Plate can be furnished—either flat or corrugated—in the proper gauges of regular, high carbon or high tensile steel, and in other commercially rolled metals.

Write for a copy of Hendrick Perforated Plate Catalogue

SEE OUR CATALOG IN SWEET'S

HENDRICK
Manufacturing Company
39 DUNDAFF STREET, CARBONDALE, PENNA
Sales Offices In Principal Cities

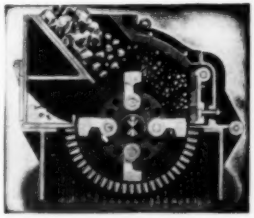
Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
Shur-Site Treads, Armorgrids

For Cost Reduction on Material Reduction...

WILLIAMS' "HEAVY-DUTY" HAMMERMILLS

Built to take 6" feed and reduce to agricultural limestone, ¾" stone and other small sizes in *one operation!* Crushing occurs on unusually heavy breaker and grinding plate before reaching grate. This permits grates to be used for sizing only, minimizing wear. The result; more output, more quickly reduced at less operating cost.

Sectional view of Williams "Heavy-Duty" hammermill, with heavy liners and grinding plate for limestone and other hard material. Particular attention is directed to the grinding plate adjustment which assures uniform close contact of hammers and grinding plate at all times. Also note the metal trap which provides an outlet for the escape of tramp iron.



WILLIAMS ALSO MAKES...

Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "packaged" crushing and grinding plants.

WILLIAMS PATENT CRUSHER AND PULVERIZER CO.
802 ST. LOUIS AVE. ST. LOUIS 6, MO.

WC40-6

WILLIAMS
CRUSHERS GRINDERS SHREDDERS

BEFORE—Dust conditions at the discharge end of a crusher at a New England rock crushing plant with Johnson-March System *OFF*.

AFTER—The same operation with the Johnson-March System *ON*. Note how the dust is stopped at the source, thus preventing it from becoming airborne.

DUST STOPPED AT THE SOURCE!
for less than 1/10 usual cost

The control of dust at the discharge end of the crusher shown above could have been expensive for this New England rock crushing plant. Ducts, fans and other costly equipment might have been installed. Yet without complicated equipment, the Johnson-March Dust Control System completely stopped dust at a cost averaging less than 1/10 that of other systems!

Hundreds of similar J-M installations all over the United States are efficiently and economically eliminating dust at such dusty centers as primary crushers, secondary crushers, conveyors, screens, dumping and loading. Installation is fast, simple and inexpensive. There is no interference with normal plant operations.

Our engineers will be glad to discuss your dust problems at no obligation. Write today for detailed information.

Johnson March
Specialists in Dust Control

Dept. PQ-3 • 1724 CHESTNUT ST. • Phila. 3, Pa.

Look for this Stamp on all "Cross" Products

the Sign of PLUS QUALITY for PLUS PERFORMANCE

CROSS

Special Analysis Steels plus

- **CROSS** *Engineering*
- **CROSS** *Workmanship*

equals maximum production

at

MINIMUM COST!

Descriptive Literature on Request

Illustrating "CROSS" Perforated Steel Corrugated Deck for VIBRATING SCREENS

CROSS ENGINEERING COMPANY

Manufacturers "CROSS STANDARDS" of Perforated Steel

Geared to the Forward Movement of American Industry

CARBONDALE, PENNSYLVANIA **PHONE: 300**

Service Agencies in All Principal Cities

FORTY PAGES

OF USABLE INFORMATION IN YOUR

BUCKET-SAVER BOOKLET

IT TELLS YOU...

HOW TO SAVE YOUR BUCKET. Among the many "bucket saver" suggestions are a list of "do's" and "don'ts" on the use and abuse of clamshell buckets; tips on how to prolong cable life; common operating mistakes that make bucket lips bow in or bend out.

HOW TO GET THE MOST FROM YOUR BUCKET. "How to Reeve the Bucket for Maximum Efficiency" is illustrated and described—one page is devoted to instructions for operators.

HOW TO REPAIR BUCKETS. Methods of renewing the cutting edges of worn bucket lips include special welding precautions. This section contains instructions for removing and replacing ball bearings in lever arm sheaves, lubrication instructions, and many other practical hints for care and maintenance.

SEND FOR BULLETIN 2373 TODAY

BLAW-KNOX DIVISION

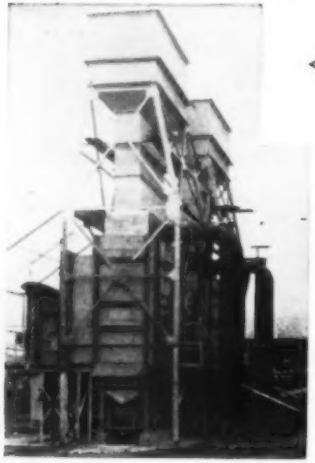
OF BLAW-KNOX COMPANY

2004 Farmers Bank Bldg. • Pittsburgh 22, Pa.

New York • Chicago • Philadelphia • Birmingham • Washington • San Francisco

BLAW-KNOX CLAMSHELL **BUCKETS**

THE MOST COMPLETE RANGE OF SIZES AND TYPES



ELLERNAN

CALCINER for burning LIMESTONE DOLOMITE etc.

2 SIZES AVAILABLE

PREHEATS — CALCINES — COOLS

AUTOMATIC CONTINUOUS OPERATION

MINIMUM FUEL CONSUMPTION

There are extra dividends available in the operation of your plant when you use Ellernan Calciners . . . let us explain the exclusive features . . . write today for literature and detailed information applicable to your operation.

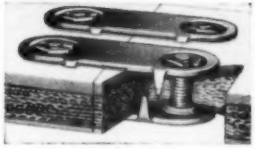
THE ELLERNAN CO.

Continental Bank Bldg. Salt Lake City, Utah

FLEXCO ®

BELT FASTENERS and RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH



Compression Grip distributes strain over whole plate area

★ FLEXCO Fasteners make tight butt joints of great strength and durability.

★ Trough naturally, operate smoothly through take-up pulleys.

★ Distribute pull or tension uniformly.

★ Made of Steel, "Monel," "Everdur." Also "Promal" top plates.

★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.

Order From Your Supply House. Ask for Bulletin F-100

FLEXIBLE STEEL LACING CO.

4623 Lexington St., Chicago 44, Ill.

BROADCAST P and Q SECTION

ADVERTISING RATE PER ISSUE: $8 A COLUMN INCH. LOWER RATES FOR LARGER SPACE USED AND/OR ON A CONTRACT BASIS. WRITE FOR RATE CARD.

CLOSING DATE: 20th OF THE MONTH PRECEDING DATE OF PUBLICATION

CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineer
75 Second St.
Newburgh, N. Y.
Phone: 1828

9 South Clinton St.
Chicago 6, Ill.
Ph. FR 2-4186

Operation
Plant Layout
Design
Construction
Appraisals

WANTED

Approx. 5 Cu. Yd. Diesel Rock Shovel—Late Model—Give Price, Location and Full Details.

One 3′ or 4′ Late Model Symons Cone Crusher. Give details.

BOX NO. K-2,
c/o Pit and Quarry Publications
431 S. Dearborn St., Chicago 5, Ill.

MECHANICAL ENGINEER

The services of a top flight mechanical engineer with practical experience are permanently required by a large and progressive organization in Montreal, Canada. The man we are looking for should be familiar with all types of roadbuilding and commercial stone quarrying machinery and equipment, and have a working knowledge of the operations of quarries, asphalt and ready-mix concrete plants. It is suggested that only those with practical experience in similar fields reply to this advertisement. Give age, details of experience, references and state salary expected. All replies will be treated in strict confidence.

Box J-12, c/o Pit and Quarry,
431 South Dearborn St., Chicago 5, Ill.

Royal E. Burnham

Attorney at Law

Patent and Trade-Mark Causes

3201 Tennyson Street, N. W.
WASHINGTON 15, D. C.

WANTED

To Expedite Production—Rock Products Equipment including Rotary Dryers, Kilns, Crushers, Bins, Ball Mills, Vibrating Screens, Filters, Power Shovels & Cranes, Conveyors, Diesel Engines. Will consider a set up plant now operating or shut down. When offering give full particulars.

P. O. Box 1351, Church Str. Sta.
New York 8, N. Y.

Diamond Core Drilling

CONTRACTORS

Fireclays, coal, limestone, gravel deposits, all minerals. Blast hole drilling.

MOTT CORE DRILLING CO.
Huntington, West Virginia

WANTED

Barge and other necessary equipment for complete 6″ sand dredge. 140 HP diesel power required. 8′ or 10′ settling tank or cone needed.

What have you to offer?

BOX NO. K-7, c/o Pit and Quarry
431 S. Dearborn St., Chicago 5, Ill.

GOOD QUALITY GYPSUM PROPERTY

Priced to sell

(Located at Island Point, Cape Breton, Nova Scotia)

Approximately 200 acres, estimated to contain 10 to 12 million tons. Situated on peninsula—about two miles long and 800 to 1200 ft. wide. Excellent shipping facilities: deep water channel directly to Atlantic—25 miles away. Huge bluffs provide low production cost. Entire area is apparently a solid block of Gypsum. Your inspection is invited. — Write:

BOX NO. K8
c/o Pit and Quarry Publications
431 S. Dearborn St., Chicago 5, Ill.

WANTED

1—Main shaft and head for #8 Austin gyratory crusher—suspended type

1—8K Gates standard drive gyratory crusher

Wire or Call

The National Lime & Stone Co.
Findlay, Ohio

WANTED

Experienced Superintendent—Willing to operate on partnership basis — Limestone and sandstone quarries in Eastern Pennsylvania. All land and equipment owned by advertiser.

BOX NO. H33, c/o Pit and Quarry Publications
431 South Dearborn St. Chicago 5, Illinois

WANTED

Master Mechanic completely familiar with repair and operation of all types of dozers, graders, tourtapulls, cartyalls, truck and crawler cranes, pumps, compressors, and other contractors equipment to manage large shop and field maintenance work for firm in the vicinity of Philadelphia. State experience, availability, give references, also indicate expected salary.

Reply to Box No. K-9, c/o Pit and Quarry
431 S. Dearborn Street Chicago 5, Illinois

Opportunity Wanted

Resourceful, energetic college grad desires move with reliable, progressive concern. Experienced in management and sales in construction equipment field. Will travel.

Box No. K-4, c/o Pit and Quarry
431 S. Dearborn Street Chicago 5, Illinois

PROCESS ENGINEERING POSITION

EXPERIENCE CEMENT PROCESSING GRADUATE ENGINEER PREFERRED

Extensive traveling in U. S. Opportunity for Advancement. Applications reviewed in confidence.

Box PQ 134, Equity, 221 W. 41st St.,
New York 36, N. Y.

SELLING

Complete Quarry Operation

This is a going business with an excellent market and limited competition. There is a good supply of stone with a long term lease. The royalty is reasonable. The quality is approved for concrete aggregate by State Highway Commission. This complete crushing and washing plant was built in 1951 and is in good condition. The plant capacity is approximately 150 tons per hour. Replacement cost of the equipment is over $225,000. This complete layout can be bought right. The location is in the Midwest. We will be glad to furnish full details to individuals or firms with a bona fide interest. Your inspection is invited.

BOX No. J-15 c/o PIT AND QUARRY
431 South Dearborn St., Chicago 5, Ill.

FOR SALE

WAYNE CRANE—½ yd. Model 22, Sr. #271 any one or all three, fronts; rubber mounted, all wheels drive, hydraulic steering. New V8 Ford motor, repainted inside and out, in excellent condition owner operated it. Must sell, asking $8000.00. Will arrange delivery by truck for 500 mile radius.

MEILE BLEMBURG, MOTOR GRADER—Model P. G. 10, 12 ft. blade and scarifier, dual wheels. $1000.00.

BUCYRUS ERIE—½ yd., Red Arch drag bucket. $285.00.

NEW, RUDOMATIC TAG LINE—Model 363. $200.00.

NEW, CHICAGO PNEUMATIC—55 lb. rock drill. $300.00.

USED, WORTHINGTON—45 lb. rock drill. $185.00.

WANTED

D.D.P.C.U. for D 6 Caterpillar 9U series.

LESTER B. FRANK
Route 3, Harrisonburg, Virginia
Phone: 1565

WANTED

Foreman for operation of a large portable crushing plant for firm in the vicinity of Philadelphia. Must be familiar with equipment maintenance and quarry production methods. State experience, availability, give references and indicate expected salary.

Reply to Box No. K-10, c/o Pit and Quarry
431 S. Dearborn Street Chicago 5, Illinois

WANTED TO BUY

COMPLETE PLANTS FOR LIQUIDATION

Complete plants for liquidation, equipment, machinery, structural steel, pipe, and tonnages of scrap iron.

M. WEBER
Box 1985 Chattanooga, Tennessee

WANTED

One 5'x10' double deck screen preferably Tyler Tyrock F-600. Must be late model and in excellent condition.

Write Phone or Wire
MISSISSIPPI VALLEY EQUIPMENT CO.
511 Locust Street St. Louis 1, Missouri
Chestnut 4474

WANTED

10-ton per hr. used Ball or Tube Mill for fine grinding slag with motor, clutch, etc.; also used Bates Valve pkng. machine compl.

Box No. K-11, c/o Pit and Quarry
431 S. Dearborn Street Chicago 5, Illinois

RUBBER CONVEYOR BELTING

At Lower Prices

Top Quality — Immediate Delivery

Width	Ply	Covers Top	Pulley
12"	4	3/32"	1/32"
14"	4	3/32"	1/32"
16"	4	3/32"	1/32"
18"	4	3/32"	1/32"
20"	4	3/32"	1/32"
24"	4	3/32"	1/32"
24"	5	1/8"	1/32"
30"	5	1/8"	1/32"
36"	6	1/8"	1/32"

And Other Sizes

Transmission Belting
Air Hose
Suction & Discharge Hose
Water Hose

Also Belting & Hose remnant bargains.

Write or wire collect for samples & prices.

E. D. HEEHS & SON
1285 Hollywood Ave., Memphis, Tenn.

FOR SALE

SHOVEL

P & H, Model 655-A, 1½ cu. yd. with manganese bucket. Powered by Cat D13000 engine. New tracks last year. Extra shovel stick and quite a few spare parts. In very good condition.

WELL DRILL

Cyclone, mounted on White half-track. Complete with all tools and 3 bits. Near new condition. Can be purchased either with or without truck.

HYSTAWAY

Dragline attachment for Caterpillar D7 tractor complete with Hendrix ⅝ cu. yd. bucket. Reconditioned and ready to install on your tractor.

GIBBS-COOK EQUIPMENT CO.
1314 Walnut, Des Moines, Iowa

CRUSHING PLANT — FOR SALE

1 24"x72' Channel Frame Conveyor with 7½ hp motor and reduction gear, complete	$2950.00
1 1030 Good Roads Crusher, Model Y-83	900.00
1 Robbins Gyrex 48"x102" Screen with motor, Model C-9, being used as scalping screen, can be converted to 2 deck	1500.00
1 NH Model 30 Apron Feeder, complete with motor	3200.00
1 36"x12' Channel Frame picking belt, with motor and reduction gear	950.00
1 Standard Cemco 23 cy Straight Leg Bin	900.00
1 TE 25 hr, 1150 RPM Diehl Motor 220-60-3 phase with base rails and v belt pulley, 8 grove	400.00
1 20T Standard 9'x20' Platform Scale	500.00
All necessary Magnetic switches, fuse boxes, etc., to install the above using 220-60-3 phase circuit	200.00
1 3 M-Barnes pump (new)	95.00

All of the above as is where is. *Entire plant can be purchased for* $10,500.00.

STEELTON SLAG COMPANY
P. O BOX 405
STEELTON, PENNA.

RAILS

All Sections
New and Relaying

Also frogs, switches, spikes, bolts, and all class of track accessories available.

M. K. FRANK
480 Lexington Ave. Park Building
New York City Pittsburgh, Penna.
105 Lake St., Reno, Nevada

SPECIAL OFFERING

1—New Acme 16" x 5' heavy duty reciprocating feeder—stock delivery.

1—Factory rebuilt Acme 18 x 32 Jaw crusher.

ACME ROAD MACHINERY COMPANY
Frankfort, New York

FOR SALE OR RENT

Rebuilt and Guaranteed
BUCYRUS-ERIE, MODEL 44-B, CRAWLER COMBINATION SHOVEL AND CRANE

2 yd. Shovel Attachment with Dipper Stick
2 yd. Owen Clamshell Bucket
Length of Crane, 65 ft. with Tagline Winder
Powered by Buda Diesel Engine
Completely Rebuilt from Ground Up by Dempster Brothers, Inc.
Can Be Inspected at Knoxville, Tenn.
Ready for Operation
This Is A Real Buy

HELRICH CONSTRUCTION CORP.
2100 Aller Avenue Phone 4-8601
Knoxville, Tennessee

L.B.SMITH INC.
OFFERS

QUARRY EQUIPMENT & BINS

4024 Cedarapids roll, rebuilt.
2025 jaw Cedarapids Rock-It plant, 3033 mill, new.
Symons 3' short head.
1236 Cedarapids Model 6C plant, new.
4033 Cedarapids hammermill, rebuilt.
3033 Cedarapids hammermill, rebuilt.
10 x 7 Allis Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
15 cu. yd. Cedarapids sand drag, new.
60-ton 2-compartment storage bin with clamshell gates.
8' x 18' two-compartment storage bin.
10' x 10' single compartment storage bin.
13' x 23' two-compartment 100-ton storage bin.
600 barrel bulk cement bin.
3' x 10' Symons double deck.
3' x 6' Kennedy Van Saun triple deck.
4' x 6' Kennedy Van Saun single deck.
4' x 6' Kennedy Van Saun double deck.
16" x 90' bucket elevator.

SHOVELS & CRANES

Lorain L-50, 1-yd. diesel. New condition.
Brownhoist 1-yd. gas shovel & crane.
Lorain L-41 diesel powered ¾-yd. shovel, rebuilt.
Lorain TL-20 diesel powered ½-yd. shovel & hoe.
Link-Belt LS50 gas ½-yd. shovel & hoe.
Lorain 30 gas ½-yd. shovel, hoe & crane.
P&H 150 gas crane.

WELL DRILLS & TOOLS

Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

MISCELLANEOUS

Barber-Greene 44C Trenching Machine.
Austin Western 77 tandem drive grader, 12' blade, scarifier.
½-yd. to 2-yd. clamshell buckets.
½-yd. to 5-yd. dragline buckets.
6-yd. and 12-yd. Sauerman buckets.

TRUCKS — TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

DIESEL ENGINES

New and used Murphy 4-cylinder diesel.
GMC 6 and 12 cylinder. Practically new.
Buda, Hercules, Hill, rebuilt.

AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, rebuilt.
Gardner-Denver 365 cu. ft. diesel, rebuilt.
Worthington 210 cubic foot, two-stage air-cooled, on skid base with Hercules diesel.
Gardner-Denver two-stage 160 ft., skid mounted.
Schramm 105 cu. ft. gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot on 2 pneumatics. Good condition.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven. 50 HP slip ring motor.
Worthington two-stage, water cooled, vertical 250 #, 60 CFM, new condition.

BELT CONVEYORS & BELT

New 18" — 24" — 30" — 36"

Phone HARRISBURG, PA. 7-3431

LASTING • BONAFIDE • SERVICE — L.B.SMITH, Inc.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

Symons 42"x14' 1½ deck vibrating screen
Universal single and double deck vibrating screens
Two enclosed Selectro single deck vibrating screens
Selectro single deck vibrating screen 18"x60"
Leahy single deck 4'x8' vibrating screen
Simplicity single deck 6'x8' scalping screen
Kent Mill ring roll pulverizer, type "G"
Reliance jaw crusher, 14"x24"
Mead Morrison 24"x30" roll crusher
Bonnot Co. 24"x30" double roll crusher
Bonded Scale 12"x16" double roll crusher
Allis Chalmers 10-K gyratory crusher
Manganese jaws, 42"x65", 30"x39", 24"x28"
Toggles and bearings for 13"x24" Farrel B
30" belt conveyor equipment, 350'
42" belt conveyor equipment, 150'
24" roller bearing belt conveyor with belt, 100'
24" ball bearing belt conveyor with new belt
18" ball bearing belt conveyor with new belt
36" roller bearing new conveyor with belt, 125'
20" flat belt conveyor equipment with new belt
Gravity roller conveyor, 8" to 20" wide
Vibrating feeders and vibrators
Two Sturtevant Exhausters, size 8", design 5
Bin gates 15"x15", 20"x20", & 24"x24"
Gear Reducers, horizontal and vertical type
Standard elevator chain for drives and drag
Elevator buckets, sprockets, belt
Belt elevator 55' high, 8" cont. new buckets
70' chain elevator, 12" cont. buckets, steel frame
70' enclosed 12" bucket elevator
82' enclosed 12" bucket elevator, heavy housing
L-B enclosed 14"x125' flat horiz. belt conveyor
Good used 24" conveyor belt in long lengths
1000 ft. 126C roller chain, D1 attachments
Pumps, motors, engines, gears and sprockets
300 selected V belt pulleys
Dryer 5'x50'

G. A. UNVERZAGT & SONS
138 Colt Street — Irvington, New Jersey

EXCELLENT EQUIPMENT

Ready to Go to Work to Increase Your PRODUCTION and PROFITS.

Heavy Duty Hammer Mills made by Williams, Gruendler, Gump, Mikro, Robinson, Raymond up to 150 H.P.

Sifters-Screens by J. H. Day or Orville Simpson; 20"x48" to 40"x120"; Selectro Screen 4'x10'.

Dry Double Ribbon Mixers up to 3000 lb. Tumbling Type Batch Mixers; all sizes.

Sprout Waldron Saw Tooth Crushers No. 10 and No. 250.

Sturtevant Jaw Crusher, 8"x10".

Ball & Jewell S/S Rotary Cutter No. 1½ powered by a 40 H.P. motor.

Redler Conveyor adaptable to move material in any direction at any desired rate of speed.

Bucket Elevators, Troughed Belt Conveyor, and Drag Conveyors.

Kilns, Dryers, Blowers, Bins, Tanks.

FIRST MACHINERY CORP.
157 Hudson Street, New York 13, N. Y.

WANTED TO BUY

3 conveyors 18" x 24". Complete with gear-motor drives with or without trussed framing. Centers: 25 ft., 35 ft. and 80 ft.
470 ft. conveyor belting 20" wide, 5 or 6 ply, used, good condition.
1 portable compressor powered by gas, cap. 100-150 cfm.
1 locomotive, std. gage, 10-20 ton. Steam, gas or diesel.
Sheet Metal Equipment:
1 48 inch power or hand brake.
1 48 inch Shear.
Other shop Tools.
2 Transit Mixers 2 cy. high disch. Rex or Jaeger preferred.
3 Drum (with steering wheels) Steam Hoist without boiler—8¼ x 10.

FOR SALE

(In good to A1 Condition)

Gates Crusher
Allis Chalmers, 5K.
6" Superior McCully Reduction Crusher, Allis Chalmers.
50 H.P. Induction 1200 RPM. G.E. with starter.
Weight of crusher 33,500 pounds.
Allis Chalmers type R.—322 Reduction Cone Crusher.
25 H.P. G.E. induction motor 1200 RPM with starting compensator.
Eccentric throw 5/16".
Close side opening 5/16" x 1".
11" drive pulley.
Kwik Mix Asph. Mixer.
LeRoy Engine, 2 Cylinder, Model MRP 3.
Size 3½" x 4¼".
Single Wheel Roller, equipped with 2 pneumatic 750 x 16 tired wheels for transporting. (This roller has about the same bearing on the surface as an ordinary five ton roller. Operator controls same as lawn mower.)
Engine—Vaughan. Single Cylinder
Model 8.
Roco Bituminous Distributor.
500 Gal. capacity.
Motor—Toro. Single Cylinder.
Shovel Attachment for Lima Crane. Practically new. 1¾" Cu. yd.
Fits Lima Model 750.
Whitman Concrete Screening Machine (Portable). Practically new.
Motor—Wisconsin Type—AB.
Size—2¼" x 2¾".
1000 gal. Insulated truck tank.
Cat walks on both sides.
Ready to mount truck.
800 gal. Insulated truck tank.
Cat walks on both sides.
Ready to mount on truck.
Trummel screen, frame and drive.
Length 14'—Diam. 5'.
Screening length 9'—Scrubber length 5'.
Two Symons Screens—4' x 10' Two Deck. Vibrating, complete with motors—Good condition.

ABOVE EQUIPMENT IN NORMAL OPERATING CONDITION.
FURTHER PARTICULARS AND PHOTOGRAPHS FORWARDED ON REQUEST.

EAU CLAIRE SAND & GRAVEL COMPANY
EAU CLAIRE, WISCONSIN

THE KEY TO LOWER CONSTRUCTION COSTS!

Key Your Equipment to the Job!

Don't waste a big compressor on a small job! E.C.A. has the RIGHT SIZE equipment for every construction job! Three plants—48 years' experience at your service!

THIS MONTH'S SPECIAL
100 TON BIN

1—100 ton Blaw-Knox Model P-3100, 3 compt. batching bin. With 1½ yd. 2-6SB weigh batcher. For rental only.

AIR COMPRESSORS
Portable, 2-stage

1—500' Ing. Rand #40-T-29621 Mdl. K-500, 100# pressure, 6 cyl. Wauk.-Hesselman Diesel eng. Mdl. 6-WAKH. Mtd. 4 pneu. tires. Wt. 19,000#, $8,000.
2—315' Ing. Rand Mdl. 315A, one with Wauk.-Hesselman Diesel eng. and one with Waukesha gas eng.

CAR PULLER

1—Mead Morrison #952, 7½ HP 3-60/220 motor to handle 1 to 3 loaded cars.

CRANES, CRAWLER

1—1 yd. Northwest Mdl. 4 #3402, 40-50' boom, lid gantry, 15' jib. Mdl. KS Wisc. gas eng. Wt. 74,400#.

CRANES, LOCOMOTIVE

1—25 ton Industrial Brownhoist Type G, 40-50-60' boom, Nat'l. Board Boiler 1562.

DERRICK, STIFFLEG

1—25 ton Model E Wiley stiffleg, cap. 25 ton @ 8', 10 ton @ 50'. With 60' boom, 12' bull wheel. For hook or clamshell operation. With galvanized sheaves.

75 KW DIESEL GENERATOR

1—75 KW, 1925 KVA; Diesel Generator, 220-440/60/3, powered by Cat. D 13000 Diesel engine, complete with electric starting and control panels. LATE MODEL. BARGAIN.

LOCOMOTIVE, 15 TON, STD. GA.

1—15 ton Vulcan Std. Ga. gasoline powered locomotive. Ser. 2003, 6 cyl. Mdl. JMS LeRoi gas eng. Wt. 30,000#.

PUMPS

WE HAVE A LARGE SUPPLY OF PUMPS, ALL SIZES, FROM 1½" to 10". ELECTRIC OR GAS. CENTRIFUGAL, VERTICAL & HORIZONTAL. ALSO DIAPHRAGM, JETTING, SLUDGE AND SUMP PUMPS.

WAGON DRILLS

1—Mdl. FM Ing. Rand, pneu. tires.
1—Worthington "Rowkmaster," 3 steel wheels.
1—Mdl. FA Ing. Rand, 3 steel wheels.
All priced at only $700 each.

Partial list only — Please let us quote on your requirements.

CHICAGO 12, ILL.
1160 S. Washtenaw Ave.
Phone NEvada 8-2400

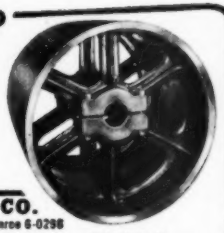
CLIFTON HTS, PA.
Box P-608,
Suburb of Phila.
Phone MAdison 6-2200

PITTSBURGH 30, PA.
P. O. Box P-913
Phone FEderal 1-2000

NEW YORK 7, N. Y.
30-P Church St.
Phone WOrth 2-0036

EQUIPMENT CORPORATION of AMERICA

PYOTT PULLEYS AND SHEAVES
special and standard sizes— 2" to 102" diameter



On special size pulleys and sheaves from 2" to 102" diameter, in practically any desired hub, spoke, face width or rim design . . . in any quantity . . . Pyott delivers quickly and reduces costs. Your rough sketch, plus accurate dimensions, starts production. Write for the Pyott folder on SPECIAL SIZE CASTINGS.

PYOTT FOUNDRY & MACHINE CO.
319 North Sangamon Street, Chicago 7, Illinois • Telephone MOnroe 6-0296
The Top Quality Line — Standard and Special Sizes in Flat Belt Pulleys and V-Belt Sheaves Que-Dee Flat Belt Pulleys and V-Belt Sheaves . . . Vee-Tex V-Belts . . . Gears . . . Flywheels

IMMEDIATE SHIPMENT

KILNS

1—9'6" x 8'6" x 200'-¾" shell.
1—9'6" x 84'-¾" shell.
1—8'6" x 110'-¾" shell.
1—10' x 90'-⅞" shell.
1—6' x 60'-¾" shell.

DRYERS

1—10' x 90'-⅞" shell.
1—7' x 60'-⅜" shell.
1—5' x 67'-⅞" shell.
1—5' x 50'-⅜" shell.
1—4'6" x 40'-⅜" shell.
1—7' x 70' indirect heat.
1—11'6" x 35' Link Belt Roto-Louvre.

FULL INFORMATION ON REQUEST

WRITE • WIRE • PHONE

BRILL EQUIPMENT COMPANY
2401 Third Ave., New York 51, N.Y.
Tel: CYpress 2-5703

CRUSHING PLANT FOR SALE

Telsmith 1324 RB jaw crusher new bearings and seals. Eagle hammermill 12x16 SKF roller bearings and new liners, new hammers. Telsmith continuous type bucket elevator 34 feet centers 14" buckets with new chain. 16 foot centers bucket elevator with 16" buckets and new chain. Revolving screen 36" diameter 16 feet long with dust jacket and extra sections. 65HP International PK40 power unit recently overhauled. All belts, drives, sprockets and chain. Price complete as is $4,000.

Box No. 357, c/o Pit and Quarry Publications
431 S. Dearborn St., Chicago 5, Illinois

Real Bargains

Northwest 1¼ yd. Dragline Crane —50 Ft. boom. Power Unit—Atlas 4 Cyl. 85 hp diesel with GE 75 KVA generator, exciter, switchboard. AC model L tractor 22" track, 95 hp with 7 yd. Continental Scraper.

Pendergast Co.
Milwaukee 4, Wis.

1—45 Ton GE Diesel Elec. Loco.
6—13TD Euclid Rear Dump 22 Ton—1948
1—Lorain MC 414 Truck Crane—1946
1—20 Ton Bay City Truck Crane
1—25 Ton Link Belt Truck Crane
1—¾ Lorain 41 Comb. S&D 1948
2—10 Ton steel Stiff Leg Derricks
1—6 Ton Huber 3W Roller
1—45' Crane Boom for Link Belt LS90
1—1½ Yd. N. W. #6 Shovel 1948
1—3000B Manitowoc Dragline 1950
1—80D Northwest Dragline 1950
1—40 Ton Industrial Brownhoist Oil Fired Loco. Crane 1943
1—40 Ton Orton Diesel Loco. Crane

B. M. WEISS COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.
RIttenhouse 6-2311

FOR SALE

One Sturtevant 16' Air Separator, complete with motor. In good condition and priced right.

Located at Carbon, Texas

Direct inquiries to: G. R. Smith, Concrete Materials & Construction Co., Box No. 790, Cedar Rapids, Iowa.
Phone 4-0201

FOR SALE

Cedarapids Super Junior Tandem Crushing Plant used only one season. Complete with 1036 jaw crusher, 2416 roll, 4'x14' double deck screen, 30" belts. Excellent condition.

James W. Bell Co., Inc.
P. O. Box 550
Cedar Rapids, Iowa

2—N. W. Model 6 Shovels—Link Belt No. 570 41 B others.

8—5FD End Dump Euclids—8—27FD End Dump Euclids—5—28FD—End Dump Euclids—16—15 yd. bottom Dumps—9—25 Yd. Euclid Bottom Dump Trucks—12—25 Yd. Bottom Dump Euclids without Tractors.

Jaw Crushers—46"x48"—42"x40"—42"x36"—24"x36"—18"x36"—36"x15"—36"x12" — 40"x10" — Symons Cone 5½'-4'-2'-2'-50x40 Dixie Hammer Mill—14" Newhouse Gyr. 4' TT Traylor—14" McCully—48" Gyrosphere—18" McCully.

Roll Crushers—Rod Mills—Ball Mills—Rotary Kilns —Dryers 10'x90' others—Feeders—Classifiers—Taggers—Mine Hoists—Motors—Transformers 150 KVA —23,000 to 2300/440—others. Gravel Plants—Blast Hole Drills—27T-29T-42T—Shovels—Cranes—Draglines—Generator Sets—250 KVA 440 Volt—Diesel—others. Dart Trucks—18 Yd. Coal Bodies.

STANLEY B. TROYER
Theatre Building Crosby, Minnesota

FOR SALE

EQUIPMENT & BUILDINGS FROM SIBLEY QUARRY OF SOLVAY PROCESS

MUST BE REMOVED FROM THE SITE!

Screening & Crusher Bldgs.
1 54" Traylor Crusher
1 Cleveland 55 Ton O.H. Crane
1 42" McCully Crusher
1 #8 McCully Crusher
6 P & M Revolving Screen Units
1 Hammermill
Cranes, Locomotives, etc.
Conveyors — Conveyor Housings

App. 2000 Tons Usable Misc. Structural Shapes & Floor Plates

Also Thousands of Misc. Parts and Accessories

INQUIRIES & INSPECTION WELCOMED

TRENTON SALVAGE PROJECT 716 West Jefferson — Trenton, Mich. Wyandotte 0433

CLYDE HYDRATOR WITH KUNTZ CONTINUOUS DUSTLESS SYSTEM, 4-5 T.P.H.
#1 RAYMOND AUTO PULVERIZER WITH THROWOUT, SEPARATOR & CYCLONE.
KUNTZ 5 x 20 CONTINUOUS HYDRATOR.
3 ROLL BRADLEY HERCULES JR. PULVERIZER.
4 x 20 & 4 x 45 & 6' x 60' ROTARY KILNS OR DRYERS.

LOCOMOTIVES

45 TON PLYMOUTH DIESEL.
12 TON VULCAN GASOLINE.
10 TON DAVENPORT GAS.
50 & 80 TON SADDLE TANKS.

LOCOMOTIVE CRANES

40 TON ORTON DIESEL.

CRUSHERS

24 X 36 JAW CRUSHER.
30 INCH SUPERIOR McCULLY GYRATORY.
48 INCH TELSMITH GYRASPHERE.
MODEL 322R—ALLIS CHALMERS
42 X 48 ALLIS-CHALMERS SUPERIOR JAW CRUSHER

R. C. STANHOPE, INC.
60 E. 42nd St., New York 17, N. Y.

Cranes

Crawlers — Truck Cranes

Diesel Generators

Tractors — D 8 — HD 14

Drag & Clamshell Buckets

Compressors — Welders

THE ELLIS CO.
2510 W. Empire St.
BURBANK, CALIF.
Rockwell 9-2061

FOR SALE
Surplus Quarry Equipment

1 #25 Kennedy Crusher, late type with split grinding ring, new type oiling system and V-Belt drive with motor—Good Condition.
1 Champion 10 x 30 Ball Bearing Overhead eccentric Jaw Crusher and drive—Good Condition — (Factory rebuilt in 1949).
2 42" x 60" Robins Vibrex 2 deck vibrating screens—Fair Condition.
67' 8 ply—18" wide transmission belt—Like New.
1 #88 Cast Iron Sprocket, 77 tooth, 8" Bore—New.
1 #88 Cast Iron Sprocket, 15 tooth, 2⅛" Bore—New.
18' #88 Malleable detachable link chain—New.
1 48" x 25' Cedar Rapids revolving screen Poor Condition.
1 18" x 36" Farrel-Bacon Jaw Crusher in good condition, ready to work.
1 K-30 Link Belt shovel, 1-yard dipper. Fair condition. Make an offer.
1 Shovel front for 105 Northwest less one stick.
1 Jaeger model 16 EL three bag mixer on pneumatic tires in good condition.

McCONVILLE, INC.
123 River Street
Ogdensburg, New York
Phone 724

FOR SALE

Immediate delivery 1 P&H Model 1400 Electric Stripping Shovel, guaranteed condition, 48 ft. boom, 34 ft. sticks, 3¾ yd. bucket, large inventory of parts.

Harmon Creek Coal Corporation
1606 First National Bank Building
Pittsburgh 22, Pennsylvania
Phone GRant 1-1474

DEPENDABLE USED MACHINES

Special. — New Pioneer 18"x100' belt conveyor; big discount from regular price.

Lorain 40 shovel
P&H ½ yd. crane
Hanson truck crane
3 yd. Dumpcrete
Pioneer 3x10 screen
Pioneer 305-W washing plant
Morris 10" manganese pump
Gruendler 10x36 roller bearing crusher
Cedar Rapids 15x36 jaw crusher
Universal-Lorain ⅝ yd. backhoe
1½ yd. Page bucket
20"x10' port. Conveyor
Eagle cinder crusher
5 HP car puller
Wisconsin VF4 motor

These machines reconditioned in our newly-built daylight plant. Come see them!

10004 Southwest Highway **TRACTOR & EQUIPMENT CO.** **Oak Lawn, Ill.**

PORTABLE CRUSHING PLANT: Cedar Rapids 10" x 36" Jaw, 16" dia. Rolls, 3' x 10' Screen, Bucket Elevator, Steel Bin, with 100 H.P. 440 volt motor, or D13000 caterpillar.
CRUSHERS, JAW: Sizes 12" x 15" to 48" x 60".
CRUSHERS, REDUCTION: Symons, Telsmith, etc. 2 ft., 3 ft., 4 ft. and 5½ ft.
BOILER: Erie City 150 H.P., ASME code, HRT 150 lbs. pressure, 4" x 18' tubes, complete with all fittings.
ELECTRIC MOTORS: 2—NEW 1000 H.P., 1800 RPM, 2300 volt, drip proof with automatic switch gear, UNUSED. 1—950 H.P. Hoist Motor, 3 phase, 60 cycle 2200 volt, 443 RPM, with all control equipment.
MINE HOISTS: 150 H.P., 6'6" dia., 6'8" face; 250 H.P., 72" dia., 48" face; 200 H.P., double drums, one clutched, 8 ft. dia., 4 ft. face. All 3 phase, 60 cycle, 2200 volt with control equipment. Head Frame for double shaft 16'9" x 17'2", height 55 ft., with or without 8 ft. dia., sheaves for 1½" rope. Other Hoists 100 H.P. to 1050 H.P., single and double drum with electric equipment.
COMPRESSORS: Worthington DC2, 29/18½ x 21, motor 600 H.P. synchronous, 440 volt, with all auxiliary equipment. 4—Ingersoll Rand Diesel portable, 500 cu. ft. @ 100 lbs. pressure, New 1951.
DIESEL MOTOR: Caterpillar D13000 portable on skids, 122 H.P.
DRYERS or KILNS: 2—10 ft. x 90 ft., heavy duty, with or without auxiliary equipment, condition like NEW. 1—Kiln 4 ft. dia. x 65 ft., complete with all equipment, oil fired, like NEW. Located Minnesota.
AIR SEPARATORS: 1—Raymond, one Sturtevant and one Gayco 16 ft. with 220/440 volt motors. Used only six months on material only slightly abrasive.
PULVERIZERS: Hardinge 5 ft. x 22", steel lined, Ball Mill, complete with disc feeder and 30 H.P. motor. Marcy 8 ft. x 12 ft. Rod Mill, double end, center discharge 500 H.P. motor. 1—3' x 4' Elmco Ball Mill complete with liners, ball charge, V-belt drive and 20 H.P. motor and control. NEW, UNUSED.
CLASSIFIERS: 4—Akins 54" Simplex single pitch, Weir type, 220/440 volt motors; used four months. Located Nevada.
BOOT BUCKET ELEVATORS: Jeffrey vertical, continuous, fully enclosed, buckets 8" x 5" on #78 Reliance chain, 70 ft. centers. NEW, UNUSED. Two 63 ft. cc on manganese chain, buckets 16" wide.
LOG WASHERS: 25 ft., heavy duty type, with 2 logs, 6" x 6" x ⅝" angles, complete.

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300—3-8301

HELP! HELP! HELP!

New and Used Parts For Sale!

Caterpillar Parts all types!

POWER UNIT PARTS for:

Murphy
Waukesha
Climax
Case

SHOVEL PARTS for:

Lima 1201
P & H
Lorain
Northwest
Koehring
Hanson
Bucyrus
Trackson Loader

TRUCK PARTS for:

Chevrolet
Ford
Dodge
Mack

MISCELLANEOUS PARTS

Air Compressor
Drill Parts
Ingersoll Rand
Chicago Pneumatic
Gardner-Denver
Cleveland
Sullivan
Timken Drill bits & steel
Ty-Rock Vibrating Screen Parts
Anti-Friction Bearings
V-Belts of many lengths & sizes
Belt lacing, sprocket & sheaves
Roller chains, screen cloth
Manganese grates, hammers, liners for Williams & Dixie mills

MOST PARTS NEW!
ALL USABLE!
Liberal discount
20% to 75% of list price!

Direct inquiries to G. R. Smith, Concrete Materials & Construction Co., Box #790, or Telephone 4-0201 in Cedar Rapids, Iowa.

Will send an itemized list.

FOR SALE

2 Universal Jaw Crushers 10 x 36 Serials 27543 and 27549

1 Chicago Pneumatic Air Compressor 315 C. F. Caterpillar Diesel D-8800 Power Unit.

Above located in Wyoming

1 Universal Jaw Crusher 10 x 36 Serial 27521

3 Koehring Dumptors Model W-55 Case Gasoline Power Units

1 Bucyrus-Erie Crane 1¼ Yard GA-3 Model Serial 11643 Powered by Wisconsin Gasoline Motor Model D-2

Above located in Wisconsin

1 Koehring Dumptor Model W-55 Case Gasoline Power Unit

1 Lima Shovel 801 Serial SL-512 Buda Diesel Power Unit

1 Ingersoll-Rand Air Compressor 315 C. F. Serial 40D-25126 with International Diesel Power Unit.

Above located in Alabama

E. C. Schroeder Co., Inc.
McGregor, Iowa

MINE AND SLOPE HOISTS
1—20,000# Allis-Chalmers, Dbl Drum
1—26,000# Nordberg, Sgl Drum
1—26,000# Vulcan, Sgl Drum AC with MG Set Complete
1—11,000# Wellman, Sgl Drum AC
1—16,000# Allis-Chalmers, Sgl Drum
1— 7,000# Ottumwa, Sgl Drum AC

CARPULLERS AND LOADERS
1— 5,000# Jeffrey Carspotter AC
1— 6,000# Brownie Carspotter AC
1— 5,000# Link-Belt Carspotter AC
1—20,000# Amer. Hoist Carspotter AC
1—20,000# LB Endless Puller

CRUSHERS & MISC.
1—36x36 Jeffrey Sgl Roll
1—12x16 Eagle Dbl Roll
1—18x20 Eagle Dbl Roll
1—420'x20" SA Comb. Scraper & Bucket Conveyor or w/o MT'r. Ideal for tipple or dock.
2—24"x60' SA porte. conveyors, AC mt'r
1—(New) NOLAN Porta. feeder
1—22"x66" SD-RS Roots Connersville Positive Pres. Blower output 45 CF per. Rev. Complete with 100 hp. AC MT'r and controls.
1—3 yd. Sauerman Scraper Bucket System
1—75'x28'x30' high Steel Building

126 So. Michigan Ave., Chicago 3, Illinois
HAWKINS & COMPANY
TELEPHONE HARRISON 7-0725

FOR SALE

65 ton Whitcomb Diesel Elec. Loco.
30 ton Davenport Diesel Loco.
5 yd. Koppel Quarry cars 56½" Ga.
30 ton Brownhoist Loco. Crane
5 ton Steel Stiffleg Derrick. New
2½ yd. Lima 1201 Shovel New '48
3000 ft. I-R Elec. Air Compressor
1½ yd. Marion elec. crawler shovel
40 ton Orton Diesel Loco. Crane

MISSISSIPPI VALLEY EQUIPMENT CO.
513 Locust St. St. Louis 1, Mo.

FOR SALE

One—Sauerman Bros. 3 drum roller bearing hoist, equipped with a 20-horsepower 3-phase electric motor, controls, heavy weight scraper, blocks, brackets, etc.

The above equipment has been used about three months and is in excellent condition.

LONG ISLAND PRODUCE & FERTILIZER CO., INC.
Riverhead, Long Island, New York

Immediate Shipment

RAILS NEW RELAYING

Switch Material
All Track Accessories

MIDWEST STEEL CORPORATION
Charleston 21, W. Va.

MURPHY DIESELS
Priced to Sell

1—ME6 radiator cooled with clutch & stub shaft.
1 Set—20 groove B sheave—18" Dia. Ball Bearing mounted. 6" not mounted.
1—ME66 radiator cooled E M Generator—100 KW.
1—ME4 radiator cooled E M Generator—60 KW.
Immediately available
Can Be Inspected in Operation
Midwest Utilities Power Equipment Corp.
1270 Augusta Boulevard, Chicago 22, Illinois
All Phones EVergiade 4-4511

For Sale

Back Hoe attachments for ½ yd. Bay City Model—25
Two Buckets wide and narrow.

1—42" Revolving Screen, 16 ft. long.

Screen-Transit Mixer.
Clam Shell Bucket and 35 ft. Boom.

DELAWARE VALLEY SAND AND GRAVEL CO., INC.
Phone 4-4304 Port Jervis, N. Y.

SHELLS FOR ROTARY KILN OR DRYERS

85 Ft. - 8'0" Dia. - ⅜" Plate
43 Ft. - 7'0" Dia. - ¼" Plate
56 Ft. - 6'0" Dia. - ¼" Plate

ROTARY DRYERS

2 - RUGGLES COLES A-10 DRYERS 70"x35' DOUBLE SHELL. WILL CONVERT TO SINGLE SHELL, PARALLEL FLOW.

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N. Y.

FOR SALE

Link-Belt L-S 40 Speeder 3/8 Yd. Gas Crawler Shovel. Extra 30 ft. crane boom with 3/8 yd. clam shell and drag line buckets. Some spare parts. General condition good. Less than 100 hours since complete motor overhaul. It can be inspected in operation any time. Price $6,750.00, our plant.

Contact Ralph Huffman,

RIPPLEMEAD LIME COMPANY, INC.

Ripplemead, Virginia

JAW CRUSHERS—7" x 12" up to 40" x 48".
CRUSHING ROLLS—16" x 10" up to 54" x 24".
GYRATORY CRUSHERS—#3 up to #12. Also one 13" Superior McCully gyratory crusher.
SWING HAMMER MILLS.
ROTARY FINE CRUSHERS—#1, #1½ and #2.
DIRECT HEAT ROTARY DRYERS—3' x 25', 5' x 30', 8½ x 70'.
SEMI INDIRECT HEAT ROTARY DRYERS—70' x 40' & 80' x 45'.
1—6' Raymond "Whizzer" Separator.
1—4' x 8½'—2 deck Robins "Gyrex" screen.
Hardinge, Marcy & Fuller-Lehigh mills.
RAYMOND MILLS—20, 200, 21 and 5 roll high side.
TUBE ROD & BALL MILLS—4' up to 8' dia.
AIR SEPARATOR—5', 6', 8' x 16' dia.
COMPLETE LIME HYDRATING PLANT.
New—Used & Rebuilt Kilns—Coolers—Dryers

W. P. HEINEKEN, INC.
50 Broad St., N. Y.
Tel. Whitehall 4-4230

FOR SALE

1—No. 95 Diamond Portable Crushing and Screening Plant with Feeder Conveyor and Hopper.

1—125 H.P. Allis-Chalmers Electric Motor with Controls.

1—27 C.Y. Jackleg Bin.

1 5'x12' Diamond Drag Washer.

1—220V. Vertical Capstan Carspotter.

200' 24" Pioneer Conveyor.
At Yard in Billings, Montana

HITZ CONSTRUCTION CO.
2111 4th Ave. N.
Billings, Montana Phone 3-3311

FOR SALE

2 — 3/4 yard Byers Model 83 shovels and 31" back hoes complete.

Priced very low.

HOOPER EQUIPMENT INC.
1256 S. State Street
Syracuse 3, New York

FOR SALE

One steel building with aluminum roof and siding, 382 feet long, 26 feet wide and 15 feet 9 inches high. These are inside dimensions.

Box No. E 28, c/o Pit and Quarry Publications
431 So. Dearborn St., Chicago 5, Illinois

IOWA 25" x 40" RB. Jaw Crusher. Guaranteed like new. Only been used 75,000 tons soft limestone. $9500.00. Can furnish 40" Apron Feeder, 10 ft.
UNIVERSAL 20" x 36" RB. JAW. Like new. $5500.00. Complete stationary plant, consisting of: Rogers 20" x 36" RB. Jaw, Gruendler 3XB Hammermill, Seco 4' x 14' 2-deck screen, Pioneer 24" Conveyors 50, 62 and 78 ft. long. Used very little. Nearly new. Would sell separately.
IOWA 25" x 40" RB. Primary Portable, also secondary either Hammermill or double roll. 3 portable units. Complete. Cost over $100,000.00. Excellent. $55,000.00. Might sell primary separately. Consider rental tonnage purchase option.
UNIVERSAL 15" x 36" P.B. Jaw Crusher. Good. $2000.00.
UNIVERSAL 10" x 36" R.B. Jaw Crusher. A1. $2500.00.
IOWA 10" x 36" P.B. Good. $1000.00.
UNIVERSAL Twin Dual Roll Crusher. 24" x 14" & 24½" x 16" finishing rolls. A1. $2500.00.
SECO 4' x 12' double deck vibr. screen. Like new. $1750.00.
SIMPLICITY 3' x 10 ft. 4-deck. A1. $1500.00.
SIMPLICITY 5' x 10 ft. Rip-rap screen, and others.
TELLSMITH Combination Scalping & scrubbing screen, 60" diameter, 8 ft. scrubber, 8 ft. scalping screen with 4" hose, including 6 ft. x 36" Apron Feeder. (2) Headers of spray piping, 32-ft.-V-belt drive, 54" centers. Complete. Used four months. Like new. Bargain.
CONVEYORS, different lengths 24" and 30".
Let us know what you are looking for. We may have it.

WENZEL MACHINERY RENTAL & SALES CO.
2136 Jefferson Street Kansas City, Missouri
Tel. Harrison 0021

FOR SALE

Large industrial property for sale or lease, centrally located between Detroit and Chicago. Good labor conditions. Ideal location, if interested will give full details.

1—Osgood truck crane, tandem axle drive.
2—Grain evacuvator with electric motors.
1—Kahlenberg 70 HP diesel engine.
1—Ingersoll-Rand double drum winch.
1—Brown Duvel moisture tester.
2—12" belt conveyors, 30' and 85'.
1—Owatonna elevator 42' feet.
1—Reeves vari-speed moto drive 5 HP motor.
1—Sturtevant silentvane fan size 95.
7—Motors 3 phase 60 cycle 220-440 volts.

OLLIE E. LAWRENCE
BOX 688
QUINCY, MICHIGAN

FOR SALE

54" x 24" Superior Crushing Rolls. These rolls manufactured by Allis-Chalmers are in excellent condition, and include Countershaft, Pulleys, 3 Belts, Roll Grinding attachment, and Reciprocating Feeder. A change in the process makes these Rolls available for only $5,700.

Riverton Lime & Stone Co., Inc.
Riverton, Virginia

REBUILT AND NEW

***GUARANTEED* MOTORS**

M.G. SETS • GENERATORS

Hoists • Compressors • Transformers
Units of Every Size and Description

WE'LL SELL, BUY OR TRADE
PHONE CANAL 6-2900

CHICAGO *Electric Co.*

1329 CERMAK ROAD
CHICAGO 8, ILL.

TIME-SAVING MACHINERY TIPS

BUCKET ELEVATORS

70'6" centers, 8"x5" buckets.
64'3" centers, 10"x8" buckets.
60' centers, 8"x6" buckets.
58' centers, 8"x5" buckets.
44' centers, 15"x12" buckets.
44' centers, 10"x8" buckets.
38' centers, 10"x8" buckets.
31' centers, 16"x8" buckets.
16'8" centers, 6"x4" buckets.
(Send for Complete Listing)

CLASSIFIERS

Dorr, duplex, 4'x28'.
30"x15' FLIGHT Separator.

CONVEYORS

13' centers, 10" wide belt, troughing.
56' centers, 16" wide belt, troughing.
475' centers, 18" wide belt, troughing.
300' centers, 16" wide belt, troughing.
29' centers, 18" wide belt, troughing.
96' centers, 30" wide belt, troughing.
50' centers, 42" wide belt, troughing.
Fuller Kinyon 5" w/C80 Compressor.

CRUSHERS

No. 3 Williams.
36"x24" Jeffrey A2.
48"x14" two-roll Traylor.
18"x36" Jaw, Traylor, Bulldog.
48" Symons vert. disc.
24"x24" single roll, Fairfield.

DUST COLLECTORS

4700 CFM, Buell, type AC-130 9½AL (6).
4700 CFM, Buell, type AC-130 9½AL, SS lined (6).
18,000 CFM, Birmingham, cyclone.
Schmieg Air Washer.

FANS & BLOWERS

All sizes from 1,000 to 75,000 CFM.

FEEDERS

Syntron, type F33, vibrating.
Jeffrey, 18"x36", vibrating.
Allis Chalmers, 26"x12"x6', vibrating.
Fuller 8", star type (2 NEW).
Fuller 12"x13" rectangular.

KILNS, COOLERS, DRYERS

11'6"x35' Roto Louvre
4'x16'x5/16" shell, welded portable.
6'x14'x1/2" welded (NEW).
5'x67'x1/2" shell.
10'x90'x1/2" shell.
7'x60'x5/8" shell.
24"x24' Sincro Cooler.

MAGNETIC PULLEY

20" dia. 36" long Magnetic Eng. Co. type MP (NEW).

MILLS

Raymond, 4 roll.
5'x22' Smidth, Tube.
6'x8' Patterson, Pebble.
6'x8' Abbe, style GPH, Pebble.
Stedman, four cage.
Size B, Abbe.
16"x40", three roll.
22"x12", four cage.

PUMP—Fuller Kinyon 5".
SPEED REDUCERS—All sizes & ratios.
SCREEN—4'x7' Tyler-Hummer.
WEIGHTOMETER—2t ons/hr. 18"x3'6" centers.

TANK CAR TANKS

6500 gal. 70"x27'10". Extra Heavy. (20).

HEAT & POWER CO., Inc.
70 PINE ST., N. Y. 5 HANOVER 2-4890
Machinery & Equipment Merchants

STOCK SPECIALS

1—Bay City, Model 45. ¾ yd. Crawler Shovel. Hoe or Crane. Gas Power. practically new.

1—Bay City, Model 42. ¾ yd. Crawler Shovel Hoe Crane. Excellent condition.

1—Marion 331 ¾ yd. Crawler Mounted Shovel Crane, gas power. Completely rebuilt.

1—P & H 255-A ¾ yd. Crawler Shovel. Hoe. Crane. Gas Power. Late Model.

1—Northwest, Model 25. ¾ yd. Crawler Shovel. gasoline power. Rebuilt.

1—Lorain. Model 40. ¾ yd. Crawler Crane and Hoe. gasoline power. Rebuilt.

1—Byers, Model 83. ¾ yd. Crawler Hoe or Crane. gasoline power. Rebuilt.

1—Bay City Model 30 Heavy Duty ½ yd. Crawler Crane-Hoe Gas Power. Late model.

1—Bay City Model 23. ½ yd. gasoline Power Crawler Hoe. Crane. Shovel. Good Condition.

1—General. Heavy Duty. ½ yd. Crawler Shovel. Hoe or Crane. gasoline power. Rebuilt.

1—Insley Model K-12. ½ yd. 1947 Shovel & Hoe, on 18" Crawlers Powered by Buda Diesel Engine. Excellent Condition.

1—Bay City Model 20. ½ yd. Crawler Shovel-Hoe Gas Power. Good Condition.

2—Bay City Tractor Shovels. Hoes or Cranes. "Pups" ⅜ yd.. ⅜ swing. Crawler mounted. gasoline driven.

1—Koehring. Model 304. Truck Mounted Crane. All-Wheel Drive Chassis—70 ft. boom. excellent condition. Gas power.

1—Lorain. Model 30 Truck Crane with 30 ft. Crane Boom and Shovel Attachment. mounted on A. C. Mack Chassis.

1—Bay City, Model 15. Truck Crane. 35 ft. boom. Hoe and Shovel. mounted on A. C. Mack Chassis.

2—Universal Truck Cranes. 28 ft. Booms. mounted on A. C. Mack Chassis. Cheap.

1—Lima Model 101 Crawler mtd. Crane. 60' Boom. Gas Power. Good Working Condition.

Clamshell Buckets ⅜ to 2 cu. yd., also several Crane Booms — Trench Hoes and Shovel Attachments—Assorted makes.

Check on what you may require.

EUGENE P. READING, INC.

Walnut St. & B. & O. R. R., Rosello. N. J.

Chestnut 5-0200—New Jersey

INDUSTRIAL PLANT SITE FOR SALE OR LEASE

South Central Michigan, half way between Chicago and Detroit. 50 acres on inland lake chain. 60,000 sq. ft. in 5 buildings; 300,000 cu. ft. in 4 silos, 11 bins. Steel and concrete construction. R R siding; utilities; good labor supply. **The Semline Corporation, 1909 Massachusetts Ave., N.W. Washington 6, D. C. Telephone Hudson 6307.**

Model 65 Bay City Diesel Shovel, 1¼ yd. h.f., new '48. 255A P&H Diesel Shovel, ¾ yd., '47. Two 8 yd. B. E. Scraper Pans. 7D Cat. Tractor with winch, rebuilt. RD7 Cat. Tractor & 10 yd. Crawler Wagon, $3500.00. D8 Cat. Tractor with winch, 1946. 8 x 8" all bronze cen't pump, 98% new. 15 ton Plymouth Gas Loco., rebuilt, 56½" ga. 1 yd. B. H. Clamshell, light wgt., $300.00. 1½ yd. D. L. Bucket, rebuilt, $450.00. New Gar-Wood Truck winch, 25,000 lbs., cap'y. Standard Shovel Front with Dipper for 93M Marion. New 60' Link Belt Crane Boom. Two 72 x 18" Erie City HRT Boilers, 125 lbs. 255A P&H Diesel Crane, rebuilt, new GM engine and 45' Boom, $9500.00. One 1R Quarry Master Blast Hole Drill used two years.

McCartney Machinery Company
Box 3105, Youngstown 12, Ohio

FOR RENT

LIMA Type 750 Crane
Cat. Diesel, 70 ft. Boom, Wide & Long Crawlers.

Immediately Available

PRIESTER MACHINERY COMPANY
P. O. Box 310 Phone 5-6885
Memphis, Tennessee

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully Guaranteed. Send us your inquiries.

V. M. NUSSBAUM & CO., Fort Wayne, Ind.

FOR SALE

1—1½ yd. Sauerman slackline, complete. This outfit consists of bucket, hoist, 100' mast, roller bearing blocks and carriage, trackline and guys.

DRIFTWOOD GRAVEL COMPANY
Box 9 Columbus, Indiana
Phone: 3182

WIRE ROPE FOR SALE: SPECIAL lot, 1⅛ at 25½c; 1" at 20½c per ft.; all 6 x 19. IMPROVED PLOW; hemp center; 47,500 ft. ⅝" to 2⅝" diameter, bright and GALVANIZED. WIRE and hemp centers; different grades and construction, for ALL purposes; 200 to 4500 ft. lengths, attractive prices; ropes GUARANTEED; 200, 150, 125, 106 and 80 E. P. ECONOMIC and Locomotive type boilers, HIGH PRESSURE; above located in EAST and Middle West.
WANTED: Belt Conveyors, any width.
BOX No. K-6, c/o Pit and Quarry Publications
431 South Dearborn St. Chicago 5, Illinois

PUT IDLE STEEL TO WORK

. . . to make NEW steel

Steel mills use *one* ton of iron and steel scrap in making every *two* tons of open-hearth steel.

But normal sources of iron and steel scrap can't keep up with demand. That's why the steel industry asks you to collect your scrap—in the form of obsolete, worn-out machinery and parts—and send it back to the mill.

Only with *your* help can current military and civilian production demands be met.

Start *your* scrap salvage program today—call in your local scrap dealer *now*.

NON-FERROUS SCRAP IS NEEDED, TOO!

PIT AND QUARRY

FOR SALE
QUARRY EQUIPMENT

Consisting of shovels, trucks, screens, power units, drilling equipment, crushers, generators, electric motors, conveyors, and miscellaneous equipment.

Located at Cedar Rapids, Iowa

PRICED TO SELL

Direct inquiries to:

G. R. Smith, Concrete Materials & Construction Co.
Box No. 790, Cedar Rapids, Iowa **Phone 4-0201**

Itemized list sent on request

CONVEYORS

Belt, Bucket, Drag or Gravity
Shaker & Vibrating Screens
Truck Scales **Crushers**
Coal Drills **Mine Fans**
Car Spotters & Hoists
Electric Motors — Floor Cranes
Mining and Stripping Equipment

WHAT DO YOU NEED?
THE INDUSTRIAL EQUIPMENT CORP.
910 First National Bank Bldg., Atlantic 1-2929
Pittsburgh 22, Pennsylvania

FOR SALE

Two — Size #10 American Blower Co. 7/8 HSD, S.I., C.H., BHD. Sirocco Fan Arrangement #1 complete with fan shaft drive and pulley without motors. Price $450.00 each, F.O.B. car, Macon, Ga. For information contact **Mr. J. R. Slocum, The Diversey Corporation, 665—12th St., Macon, Ga.**

FOR SALE

1—6' dia. x 4' long Abbe Ball Mill
1—36" x 60" Tyler Hummer Screen Vibrator
1—16-40 Gruendler Hammer Grinder

Apply Box K-3, c/o Pit and Quarry
431 S. Dearborn Street **Chicago 5, Illinois**

FOR SALE

4' x 20' Telsmith Washing & Sizing Screen, with 6' Scrubber section. Like new. Price $2,000.00 F.O.B. plant—Upper Black Eddy, Pa.

DURNAN & GOOD
UPPER BLACK EDDY, PENNSYLVANIA

FOR SALE

(2) Mack Trucks with 3 yd. transit mixers; also large White 10 wheeler with almost new Rex 5½ yd. mixer. Write:

O. W. HOUTS & SON, INC.
N. Buckhout **State College, Penna.**

FOR SALE

BELT ELEVATOR 24" x 50' inclined elevator with 21½ x 10" buckets.

BOOMS for 80D Northwest. One crane boom 65', and one dragline boom 75', with 2½ yd. bucket.

G. & W. H. Corson, Inc.
Plymouth Meeting, Pa.

FOR SALE

BOGIE WHEELS — 7¼" x 12"
Ideal for conveyors.

CLEAN AUTO PARTS
4049 EVANS, ST. LOUIS 13, MISSOURI

FOR SALE

Immediate Shipment from Stock

			Cwt.
200 Tons	5" I Beams	10.0# x 40'	$6.50
200 Tons	6" I Beams	12.5# x 40'	$6.50
200 Tons	8" I Beams	18.4# x 40'	$6.50
200 Tons	12" I Beams	31.8# x 40'	$6.50
100 Tons	6" H Beams	20# x 40'	$6.50
200 Tons	8" H Beams	31# x 40'	$6.50

F.O.B. Baltimore, Md.

Hyman-Michaels Company
122 S. Michigan Avenue
Chicago 3, Illinois
WAbash 2-4911

FOR SALE

1. One C-4-30 Pennsylvania Hammermill. Complete with 125 H.P. Totally enclosed motor, coupling, Remote Control Starter, Reversing switch and ammeter. Extra Hammers and grate bars. Motor and Mill mounted on steel base.
2. Two new 400 Amp. A.C. Welders.

For further particulars write or call

Terminal Materials Corporation
308 Water Street, Phone 3-1571
St. Joseph, Michigan

RAILS — Immediate Shipment

New 20# to 60# Light Relay 25-30-40#
Heavy Relay 56# to 80#
Tie Plates — Track Spikes — Splice Bars
CREOSOTED CROSS TIES
W. H. DYER CO., INC.
2111-P Railway Exchange Bldg., St. Louis, Mo.
Stocks at Various Points

AIR COMPRESSORS
SELTED: 285, 535, 670, 1000, 1200 & 1870 Ft.
ELECTRIC: 507, 1303, 1722, 2850, 3178 & 3700 Ft.
DIESEL: 105, 315, 490, 500, 603, 807 & 1000 Ft.

CRANES — DRAGLINES — SHOVELS
9—Elec. Shovels, 17, 10, 5, 4, 2 & 1 Yd.
4—Walker Draglines, 2-6-9-16 Yd.
3—25 & 40 Ton 120 Ft. Boom Whirleys.
7—Loco. Cranes 80, 25, 20 & 40 Ton Diesel & Steam.
8—Diesel Shovels & Cranes 1 to 5 Yd.

DUMP CARS
46—KOPPEL, 1½ Yd., 24 & 30 & 36 & 42 In. Ga., V Shaped.
115—2 Yd., 3 Yd., 4 Yd. 36 In. Ga.
60—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
6—10 ton Phoenix Quarry cars-std. ga.

BALL, ROD & TUBE MILLS
5'x22", 6'x22", 6'x48", 8'x22", 8'x36" & 10'x36"
Hardinge Conical Ball Mills.
3'x3', 4'x3', 4'x4', 5'x4', 6'x4', 6'x6' & 7'x8'
Cylindrical Ball Mills, Marcy, Allis Chalmers, etc.
4x8, 4x10, 5x12 & 7x10 Rod Mills.
2—5'x22' Silex Lined Tube Mills.
5x22 Marg. Lined Tube Mill.

PULVERIZERS
Bradley Hercules Junior.
No. 0 & No. 1 Raymond Automatic Pulverizers.

HYDRATORS
4 & 5 T.P.H. Continuous Dustless Hydrators.
2 Clyde Batch

SEPARATORS & CLASSIFIERS
30", 8', 10', 14' & 16' Air Separators. Sturtevant & Gayco.
6' x 14' Hardinge Counter Current Classifier.
24", 26", 48" & 78" Spiral Classifier.
Thickeners 14' to 30'.
Dorrco 4 Pocket Sizer & Several Rake Classifiers.
Dings 60"—3 Roll Type 1B Magnetic.
18" Wetherill Type S & S Pole Magnetic.

BLAST HOLE & WELL DRILLS
Loomis 44, Keystone 51 & 71
10—IR—9M2—Wagon Drills

JAW CRUSHERS
Blake Type—9x15, 10x30, 12x24, 13x24, 13x30, 15x30, 15x36, 24x36, 36x42, 40x48, 60x42, 84x60, 42x48 & 48x36
Single Shaft Type—9x15, 10x16, 11x18, 8x30, 10x30, 13x24, 13x30, 10x36, 15x36, 18x36, 20x36, 24x36, 10x42, 30x42
Cam & Roller Type—9x10, 6x20, 10x16, 10x20, 10x36, 11x15, 13x15, 13x23, 13x24, 13x26, 11x24, 11x26, 13x32, 13x36, 14x36, 18x32, 9x40, 24x40, 22x80

REDUCTION TYPE CONE CRUSHERS
Allis Chalmers 322S Newhouse 5½" 7" & 10"
Symons 2', 3', 4' Std. 5½" Short Head 7" Bond Tols. Gyro 24", 36" & 4' Short Head
Traylor 1'6", 2'6" TY No. 12 BH, 36", 48" TS
Kennedy 19-S, 25-S, 37-S, 49-S

PRIMARY TYPE GYRATORY CRUSHERS
Allis Chalmers K&N No. 3, 4, 5, 6, 7½, 8, 9, 12
Superior McCully 24", 30", 36" and 42"
Austin No. 3, 4, 105, 107, 8
Traylor Bulldog 13½", 14", 16", 20", Tols. 10B, 13B

STEEL DERRICKS
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

ASPHALT & OIL TANKS
15—8000, 10000 and 30000 gal. cap. with coils.

RAILROAD CARS
100—8000 & 10,000 gal. cap. Tank Cars.
100—50 Ton & 70 Ton Battleship Gondolas.
80—50 Ton Cap. Flat Cars.
10—Side Dump covered, 70 ton Hopper Cars.

LOCOMOTIVES
DIESEL: 15, 30, 48, 65 & 100 Ton.
GASOLINE: 3 Ton, 5 Ton, 9 Ton, 12, 14 & 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 3 Ton, 8 Ton, & 17 Ton & 40 Ton.

HAMMER MILLS
JEFFREY 24 x 18 A, 36 x 24 & 36 x 42 B
WILLIAMS No. 15 SLUGGER & 60 GA.
GRUENDLER 2-XB — 3-XB & 6-XC
DIXIE—5040 MOGUL 3424, 3630 & 3650 PREMIER
PENNSYLVANIA CA-36 Impactor and SXT-11 & 13

ROTARY DRYERS — KILNS
60"x35' Ruggles Coles XB Indirect.
Double Shell: 48"x20', 70"x35'
Direct Heat: 4'x20', 4'x40', 4½'x40', 5'x24', 5'x30', 5'x50', 6'x35', 6'x60', 80"x60', & 90"x60'
Kilns: 4'x48', 6'x60', 8'x50' & 9'x170'

CONVEYOR BELTS
6600 Ft. 36, 42, 48 & 60 In. Wide

SCREENS
VIBRATING: 3x8, 3x8, 3x5, 4x8, 4x8, 4x10, 4x12.
HUMMER, NIAGARA & ROBINS, LINK BELT.

DIESEL GENERATORS
4—100 KW G.M. 3/60/220/440 V.
2—60 KW International 3/60/220 V.
2—50 KW Superior 3/60/220 V.
3—74 KW Caterpillar 3/60/220/440 V.
1—190 KVA Baldwin-DeLavergne 3/60/440 V.
1—New 600 KW American 3/60/480 V.
1—300 KW Chgo. Pneu. 3/60/2300 V.
1—500 KW F.M. 3/60/2400 V.
1—432 KVA Worthington 3/60/2300 V.
8—230 Volt Direct Current 50 to 800 KW
1250 KVA Nordberg 3/60/2300
1—600 KW Gen. Motors 2300V
2—600 KW Ingersoll Rand 2400V.

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N.Y.

Portable CRUSHING PLANTS: 880 Jr. Gravelmaster 100 yd. per hr. Telsmith w/23x36" crusher.
CRUSHERS: 9x16 & 10x20 Univ. 12x36 Pioneer, 24x36 Kennedy, 48x36" Farrell & Nordberg JAW #25 Kennedy, 322R Allis, 16B & 48" Telsmith, 30" McCully GYR. 2 & 3' std. 5½" shorthead SYMONS. 18x24 & 54x21 80iL ROLL. 40x22 & 36x16 DBL. ROLL.
NW 25, 5 & 6, Osgood 1¾ yd. Lorain 820 DRAGLINES.
30" x 8' & 36" x 12' Apron FEEDERS.
MILLS: Williams 4 & 5. Gruendler 2 & 3 XB. Dixie 36x30 w/revolving breaker plate. Raymond & Williams 4 & 5 roll high side.
SHOVELS: Link Belt LS75, Buckeye 70, Lorain L41 1 yd. Byers, Link Belt K25, NW 5 & 6, Lorain 77 & 79, Marion 37, 362, Bucyrus 50B, 52B & 54B, NW 78, 80D & 95, Lima 1201, Marion 46A, 111M & 392, Link Belt K580, Bucyrus 80B Elec.

Repres.: Bonded Scale and Machine Co.
Thurman Machine Co.

MID-CONTINENT EQUIPMENT CO., INC.
8321 Gannon St. Louis 24, Mo. Wydown 2826

EQUIPMENT FOR SALE

FOR 35 YEARS
AT SAME ADDRESS WITH SAME NAME,
MEANS BETTER SERVICE

PULVERIZERS:

1—5 roll Raymond High Side, #5057, complete with separator, exhauster, cyclone, tubular, inter-connecting piping.
1—4 roll Williams "Standard."
6—No. 1, 0, 00, 000 Raymond.
2—No. 00 and 8" Raymond Screen Mills.

HAMMER MILLS:

1—30"x12" Williams, roller bearings, with motor.
1—#1 Williams "Jumbo Jr."
1—#XX Williams Universal, roller bearings, with motor.
1—24"x16" Sturtevant, bar hammer crusher.
2—Type MT Jeffrey Crushers, each with 125 H.P. motor.
2—Jeffrey Mills, 36"x24" and 36"x42" Type E.

BELT CONVEYORS:

2—42" Robins, complete with head and belt pulleys, gear reducers, etc. Complete with all idlers, etc.
162—42" Robins Troughing Idlers, Style 253 XR, Timken bearings.
46—Robins Return Idlers, Style S-350, Timken bearings.
1?—Steel supporting Belt Conveyors from 18" to 36" wide, various lengths, including motor drives.

CRUSHING ROLLS:

1—42"x16" Allis Chalmers, Type B.
1—24"x15" Sturtevant Balanced type.
1—24"x32" Penna. Single Roll with motor.
1—24"x36" McLanahan single roll.

ROTARY DRYERS:

1—3'x24' ALL MONEL, with all auxiliaries.
1—5'x24' Coatesville, ½" shell.
2—5'x40' Ruggles Coles.
4—4'x30', 5'x30', 6'x40', 6'x60'.
1—6'x60' Louisville Rotary Steam Tube Dryer.
1—6'x27' Louisville, with 42 stainless steel tubes.
1—7'x70' Louisville, direct heat.

VIBRATING SCREENS:

3—"Selectro" 8'x6' 2-deck, one 3'x6' 1 deck; all totally enclosed, heavy duty.
1—3'x6' Colorado Iron Works, 1 deck.
1—4'x8' Tyler Niagara, 3 decks.
8—Tyler Hummer Screens, 3'x5', 4'x5', 4'x10'.

VACUUM FILTERS:

1—8'x12' Oliver acid proof, wood and lead.
2—4'x4' Oliver, all bronze, top feed salt type.
2—8'x12' Oliver, all steel.
1—5'4"x6' Oliver, all steel.
1—American 6' dia. 2 disc, complete, 100 sq. ft. F.A.

BRIQUETTE PRESS:

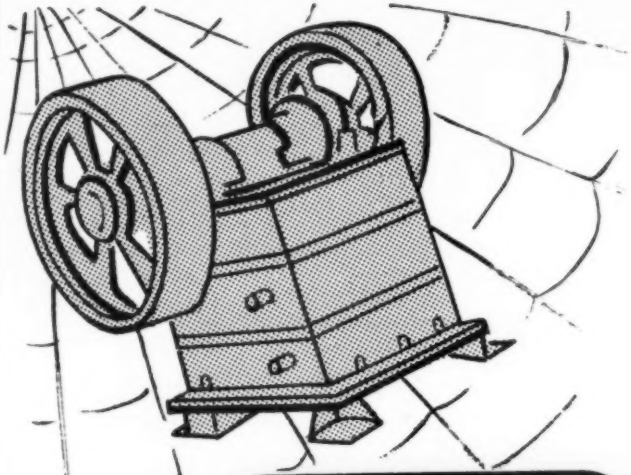
1—36"x24" Komarek-Greaves, two roll.

SIMPSON MIXERS:

18", #2 - 6', #3 - 8'.

ALSO Shovels, Cranes, Draglines; Jaw, Gyratory and other crushers; Symons and Telsmith Cones; Complete Portable Crushing Plants; Rotary Kilns and Coolers; Air Compressors; Conveyors; etc.

CONSOLIDATED PRODUCTS COMPANY INC.
17-19 Park Row, New York 38, N. Y.
BArclay 7-0600



IDLE EQUIPMENT WASTES MONEY

SELL IT *through the* P & Q BROADCAST SECTION

A good way to get back a large part of the money you spent for equipment you're no longer using is to SELL IT.

And, the best way to sell it is through THE *Broadcast Section*— P & Q's Market Place for Equipment, Supplies and Services.

You too can dispose of your surplus equipment at very small cost. P&Q's 15,000 readers are your potential buyers. Remember, idle equipment is a waste of money. Let someone else have the benefit of equipment you can't use in exchange for hard cash you can use in other ways. The cost is small — only $8.00 a column inch.

PIT AND QUARRY BROADCAST SECTION
431 SOUTH DEARBORN STREET, CHICAGO 5, ILLINOIS

RELAYING RAIL

All Sizes
Track Accessories
LEFTON INDUSTRIAL CORP.
General Office: 212 Victor Street
St. Louis 4, Missouri

NORTHWEST 80D

Shovel; late model. Other sizes

H. KLEINHANS COMPANY
431 Union Trust Building
Pittsburgh 19, Pa.

TRIMME conveyor, 15 ft. long, 12 in. wide, cleated rubber belt, 5 HP Wiscorsin Engine. Brand new condition, selling due to lack of storage space, new price $750.00. YOURS FOR ONLY $400.00, F.O.B. Buffalo, N. Y.

RAPIDS HANDLING EQUIPMENT CO.
2548 Elmwood Avenue
Buffalo 17, N. Y.

FOR SALE

Link Belt Steam Locomotive Crane, s/n 766: 50' Boom; 40 H.P. Boiler; rated capacity 20 tons at 12'. In good working condition.

STOCKBERGER-SEASTROM, INC.
1489 Madison Avenue, Indianapolis, Indiana

2 ROTARY KILNS

5'6" x 7'0" x 60'0"

LOCATED IN ARKANSAS

R. C. STANHOPE, INC.
60 E. 42nd Street, New York, N. Y.

20 Ton Stdg. Ga. Saddle Tank Locomotive
105' Schramm Portable Air Compressor
43" & 50" Vertical Code Boilers 100/150#
250-150-100-60-35 HP Self-contained Boilers
17,000-20,000-24,000 Gal. Vert. Steel Tanks
3-Large Steel Bins; 180 Tons; Screen; Etc.
250-200-150-100 HP Motors—Rebuilt—Others

H. & P., 6719 Etzel, St. Louis 14, Missouri

FOR SALE

1 Allis-Chalmers Twin Screw Sand Washer,—Screws—12' long, 16" in Diameter.—Price $1000.00.

SOUTHEASTERN SAND & GRAVEL CO., INC.
TALLASSEE, ALABAMA

FOR SALE

Chicago Pneumatic Diesel Engine RHA—40D, Serial No. 19785, 120 H.P. Good operating condition. Complete with fuel tank, starting unit, spare parts, etc. Price $3,000.

Arvonia-Buckingham Slate Co., Inc.
Phone Mr. Yancey, Dillwyn 42F24
Arvonia, Virginia

WANTED

Mill Superintendent. Man familiar with crushing, conveying and elevating machinery. Location central Virginia. If interested give full details regarding self. Age desired 30 to 45 years.

Box No. E 27, c/o Pit and Quarry Publications
431 South Dearborn Street Chicago 5, Illinois

24 x 36 FARRELL 14B
JAW CRUSHER No. 8625
PRICE $5500. NO. CAROLINA

DARIEN
60 E. 42nd St., New York, N. Y.

FOR SALE

LOCOMOTIVES

1—Davenport 110 Ton—D-E.
1—Brookville 10 Ton Diesel—30" Ga. Like New.
1—Plymouth 6 Ton Gas—36" Ga. Very Good.
3—Whitcomb 15 Ton Diesel—36" Ga.
1—Davenport 10 Ton Diesel—36" Ga.
1—Plymouth 20 Ton Gas—S.G.
1—G.E. 45 Ton D-E.

LOCOMOTIVE CRANES

1—Industrial—50 Ton Steam.

CARS

21—15 Ton Hopper—36" Ga.
3—50 Ton Hopper Cars—Excellent.
4—50 Ton Flats.

MISCELLANEOUS

1—American—Mod. 2036—Stiff Leg—New—Bargain. 50 Ton @ 48'.
2—American Mod. 140—3 Drum Hoists with Swingers—3-60-440 14,000# S.L.P.
1—Flory D.D. Elec. Slope Hoist 150 H.P.
2—Conway 75 Muckers—#256 & 305. Large Number New Repair Parts.
1—Worthington 659' Compressor—3-60-440.

R. H. BOYER
2005-13 W. Bellevue St. Philadelphia 40, Pa.
Phone SA. 2-7132

FOR SALE

BLAKE JAW CRUSHER

12 x 16. Flat pulley 27" diameter—A-1 shape. Price $850.00.

UNION MINING COMPANY
2041 Oliver Bldg., Pittsburgh 22, Pa.

FOR SALE

One: Fairbanks-Morse diesel engine, Type Y, Style VA, 180 HP.

BLUE DIAMOND CORPORATION
1050 S. Alameda St., Los Angeles 54, Calif.

2—Mixer Mobiles with 35' Tower & 10' Ext.
1—Tower Mobile with 40' Tower

Silver Hill S&G Company
4600 St. Barnabas Road, S. E.
Washington 20, D. C.

COMPLETE READY MIX PLANT
3 and 5 Compt. 150 and 240 yd. one stop Mix Plants
Hydraulic Dredges, 6-8-10-12-16-20-22"
Bins—Material and cement 2-3-4- Compt.
Locomotives and cars
Barber Greene Asphalt Plant, model 848
Cranes, Shovels Locomotive Cranes
Buckets, Clam & Dragline
Boats for sand & gravel

"STONE THE CRANE MAN"
1132 Prudential Bldg., Buffalo 2, New York
Phone MOhawk 4494

FOR SALE

Complete Limestone Quarry Operation. (Deposit est. at 2 million tons.) Plus 165 acres Sandstone—Supply unlimited. All equipment less than 4 years old. Owner moving dry climate for wife's health.

BOX NO. H34, c/o Pit and Quarry Publications
431 South Dearborn St. Chicago 5, Illinois

CASH FOR YOUR SURPLUS

LIQUIDATION LIME PLANT

CRUSHERS
1—Sturtevant #2 Rotary Fine Crusher.
1—Williams Helix-Seal Pulverizer, size B, with 1/4" and 1/4" cages.
1—Telesmith 5H Gyratory Crusher
1—36" x 24" Jeffery Miracle Pulverizer, all with motors.

CONVEYORS & ELEVATORS
STEEL BINS AND TANKS
2—Circular Steel Bin, 80 & 100 ton lime capacity.

COMPRESSORS & DRILLS

TRUCKS & HAULING EQUIPMENT
2—2 yd. 200 FL Dempster Hoisting Units, mounted on 2 ton GMC truck, pneumatic tires.
7—2 yd. Dempster Drop Bottom Skip Buckets.
1—1½ ton, 1941 GMC Dump Truck with 3 yd. steel body.
1—1½ ton, 1942 IHC Dump Truck with 3 yd. steel body.
1—Single Drum Clyde Hoist.

SIFTERS
1—3' x 8' Universal Shaker Screen with 5 HP, 1750 RPM, 220V, G.E.

LIME HYDRATING EQUIPMENT
1—No. 3 Raymond Automatic Pulverizer & Separator.
1—Clyde Batch Type Hydrator 1 ton capacity.

KILNS
4—Keystone type jacket Kilns, 3/16" metal, 40' high, 9' dia.
1—Arnold & Weigel Kiln, 3/16" metal, 35' high, 13' dia. with enclosed top. Steel storage hoppers and supports.

MOTORS—3 HP to 100 HP

MISCELLANEOUS EQUIPMENT

OFFERINGS ARE MADE SUBJECT TO PRIOR DISPOSITION.

CROWN MACHINERY CO.
2323 N. 9th St., St. Louis 6, Missouri

PUBLIC AUCTION SALE

$100,000.00 VALUATION
Modern Agricultural & Industrial Limestone Machinery
All machines individually motor driven

FORMER DOVER PLAINS LIMESTONE CO., DOVER PLAINS, N. Y. (90 mi. NORTH OF NEW YORK CITY).
SALE STARTS AT 11:00 A.M. on APRIL 24. CRUSHERS, ROTARY DRYERS, ROTARY SCREENS, VIBRATING SCREENS, HAMMER-MILLS, BALL MILLS, SCREW CONVEYORS, BELT CONVEYORS, BUCKET ELEVATORS, MAGNETIC PULLEYS, STEEL BINS, MISCELLANEOUS SUPPLIES, CONVEYORS, TANKS, STARTERS, MOTORS UP TO 100 HP, ETC. INSPECTION: APRIL 22 & 23. PHONE, WIRE, WRITE FOR CIRCULAR.

Bernard Magrill, Auctioneer
194 Broadway Brooklyn 11, N. Y. STag 2-4574-5

BARGAIN!

Cedarapids, "Single Pass" Portable Crushing Plant, one yr. old, new jaws, perfect. $9800.00

T. Southworth
Tractor and Machinery Co., Inc.
Albany, New York PH: 5-5255

JAW CRUSHERS — 6" x 3" to 60" x 48"

Before buying or selling any FARREL-BACON JAW CRUSHERS it will pay you to consult

BACON-PIETSCH Co., Inc. 149 Bway.—N. Y. City—DI. 9-3620
Engineers & Manufacturers ***Send for Catalogue***

Machine Shop Facilities

FEEDERS, Conveyors, Screens, etc.

INDEX TO ADVERTISERS

Acme Road Machinery Co. 212
*Allis-Chalmers Mfg. Co. 18, 36, 65, 117, 205
Agency—Compton Adv., Inc.
Allis-Chalmers Mfg. Co. Tractor Div. 8
Agency—Bert S. Gittins
American Hoist & Derrick Co. 145
Agency—Alfred Colle Co.
American Manganese Steel Div. of American Brake Shoe Co. 30
Agency—Fuller & Smith & Ross, Inc.
American Steel and Wire Co. 120, 121
Agency—Batten, Barton, Durstine & Osborn
American Wheelabrator & Equipment Corp. 135
Agency—The Jaqua Co., Adv.
Anaconda Wire & Cable Co. Sub. of Anaconda Copper Mining Co. 4
Agency—Kenyon & Eckhardt, Inc.
Armstrong-Bray and Co. 206
Agency—Ross Llewellyn, Inc.
Athey Products Corp. 93
Agency—Hosler Adv. Inc.
Atlas Powder Co. 207
Agency—Aitkin-Kynett Co.

*Babcock & Wilcox Co. 69
Agency—O. S. Tyson & Co., Inc.
Barber-Greene Co. 16, 17
Agency—Buchen Co.
*Bemis Bro. Bag Co. 62
Agency—Gardner Adv. Co.
*Besser Manufacturing Co. 199
Agency—Paulson-Gerlach & Associates, Inc.
Blaw-Knox Div. of Blaw-Knox Co. 210
Agency—Russell T. Gray, Inc.
Bonded Scale & Machine Co. 191, 192
Boston Woven Hose and Rubber Co. 61
Agency—Sutherland-Abbott
Boyer, R. H. 221
Bradley Pulverizer Co. 112
Agency—Sanders & Thomas, Inc.
Brill Equipment Co. 214
Broadcast Section 211-221
Bucyrus-Erie Company 64
Agency—Bert S. Gittens, Adv.
Burnham, Royal E. 211
Butler Bin Co. 181
Agency—Davis-Greene Corp.

Carpenter Manufacturing Co. 197
Caterpillar Tractor Co. 21
Agency—N. W. Ayer & Son, Inc.
Chain Belt Co. 66
Agency—Buchen Co.
Chase Foundry & Mfg. Co. 196
Chicago Pneumatic Tool Co. 72
Agency—G. M. Basford
Chrysler Corporation (Industrial Engine Div.) 31
Agency—Zimmer-Keller, Inc.
Cities Service Oil Co. 13
Agency—Ellington & Co., Inc.
Clark Equipment Co. 178
Agency—Maresteller, Gebhardt & Reed, Inc.
Cleveland Wire Cloth & Mfg. Co. 141
Agency—Gregory & Hause, Inc.
Coast Metals, Inc. 26
Agency—Lewis, Williams & Saylor, Inc.
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div. 67
Agency—Doyle, Kitchen and McCormick, Inc.
Colprovia Roads, Inc. 142
Columbia Machine Works 195
Agency—Ray Carr Organization
Combustion Engineering-Superheater, Inc. 60
Agency—Wamsley & Heer, Inc.
Commercial Shearing & Stamping Co. 194
Concrete Equipment Co. 188, 196
Agency—Simmonds & Simmonds, Inc.
Concrete Materials & Construction Co. 216, 219
Consolidated Products Co., Inc. 220
Cook Brothers Equipment Co. 152
Agency—Houston Adv. Service.
Cross Engineering Co. 210
Crown Machinery Co. 221
*Cummins Engine Company, Inc. 91
Agency—Needham, Louis & Brorby

Detroit Diesel Engine Div. 201
Agency—Kudner Agency, Inc.
Dodge Division Chrysler Corp. 53
Agency—Ross Roy, Inc.
Du Pont De Nemours & Co., E. I., Inc. 5
Agency—Batten, Barton, Durstine & Osborn

*Eagle Crusher Co. 114
Agency—Coleman Todd & Assoc.
*Eagle Iron Works 131
Agency—Tri-State Adv. Co.
Eaton Mfg. Co. 33
Agency—Clark & Rickerd, Inc.
Eau Claire Sand & Gravel Co. 213
Edmont Mfg. Co. 197
Agency—Mumm, Mullay & Nichols, Inc.
*Ehrsam & Sons Mfg. Co., J. B. 206
Agency—McCormick-Armstrong Co.
Eighmy Equipment Co. 190
Elmco Corporation 15
Agency—Matsie Company
Ellernan Co. 210
Agency—Anastasion, Adv.
Ellis Company 215
Equipment Corp. of America 214
Agency—George L. DeVille, Adv.
*Euclid Road Machinery Co. 32
Agency—Bayless-Kerr Co.

*Farrel-Bacon 138
Agency—Gassaway, Mark & Co.
Farval Corp. ..... Inside Back Cover
Agency—Griswold-Eshleman Co.
First Machinery Corp. 213
Fleming Mfg. Co. 197
Agency—Christy Humburg Adv.
Flexible Steel Lacing Co. 210
Agency—Kreicker & Meloan, Inc.
Ford Motor Co. 41
Agency—J. Walter Thompson Co.
Forney's, Inc. 197
Agency—Danford Studio
Fort Worth Steel and Machinery Co. 202
Agency—William E. Jary Co.
Francis Steam Generator Co., Inc. ... 181
Frank, Lester B. 212
Frank, M. K. 212
*Fuller Co. 34, 185
Agency—O. S. Tyson & Co., Inc.

Gardner-Denver Co. 2
Agency—Buchen Co.
General Electric Co. 22, 23, 42, 43
Agency—G. M. Bastord
Gibbs-Cook Equipment Co. 212
Gilson Screen Co. 143
Goodyear Tire and Rubber Co. 3
Agency—Kudner Agency, Inc.
Gulf Oil Corporation 35
Young & Rubicam, Inc.

Hammond Bag & Paper Co. 208
Agency—Walker & Downing
Hannon and Sons, F. R. 206
Agency—Ted Witter, Advertising
Harnischfeger Corp. 28
Agency—Buchen Co.
Hawkins & Co. 216
Heat and Power Co., Inc. 217
Heebs & Son, E. D. 212
Heidenreich, E. Lee 211
Heltzel Steel Form & Iron Co. 187
Agency—Meek and Thomas, Inc.
*Hendrick Mfg. Co. 208
Agency—G. M. Basford Co.
Hendrix Manufacturing Co. 147
Agency—Svolos Adv. Service
Hercules Powder Co. 49
Agency—Fuller & Smith & Ross, Inc.
Holbeck Corp. 137
Homer Mfg. Co. 223
Agency—Central Adv. Agency
Horn Co., Inc., A. C. 183
Agency—J. D. Tarcher & Co., Inc.
Houston Concrete Machinery Co. 186
Agency—W. L. Culver Adv. Service
*Hyster Company 189
Agency—Simon & Smith

International Harvester Co., (Industrial Engines Div.) 37
Agency—Leo Burnett Co., Inc.
International Harvester Co. (Motor Trucks) 59
Agency—Young & Rubicam, Inc.
International Nickel Co., Inc. 40
Agency—Marschalk & Pratt Co., Inc.

*Jaeger Machine Co. 176, 177
Agency—Mumm, Mullay & Nichols, Inc.
*Jeffrey Mfg. Co. 48
Agency—Byer & Bowman Adv.

★See also Detailed Information in 1951 Pit and Quarry HANDBOOK

Contract Core Drilling

Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures.

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

Advertise your wants and surplus equipment in

PIT QUARRY

INDEX TO ADVERTISERS

*Johnson Co., C. S. 50, 51, 197
Agency—Andrews Agency, Inc.

Johnson-March Corp. 209
Agency—Beaumont, Heller & Sperling, Inc.

Jones Concrete Machy. Co., J. A. ... 194
Agency—G. M. Basford Co.

Joy Manufacturing Co. 222
Agency—Walker & Downing

*Kennedy Van Saun Mfg. & Eng. Corp. 55, 56, 57, 58
Kent Machine Co. 193
Agency—T. H. Ball & Sons
*Koehring Company 50, 51
Agency—Andrews Agency, Inc.
Korb-Pettit Wire Fabrics & Iron Works, Inc. 144
Agency—Carl Mason Craig

Landis Steel Co. 146
Agency—Gibbons Adv. Agency Inc.
Lawrence, Ollie E. 217
Leschen & Sons Rope Co., A. 145
Agency—Arthur R. MacDonald, Inc.
LeTourneau, Inc., R. G. 24, 25
Agency—Andrews Agency, Inc.
*Link-Belt Company 1, 63
Agency—Klau-Van Pietersom-Dunlap Assoc. Inc.
Ludlow-Saylor Wire Co. ..... Inside Front Cover

Macwhyte Co. 138
Agency—Needham, Louis & Brorby, Inc
Marietta Concrete Corp. 195
Agency—Harry M. Miller, Inc.
Marion Metal Products Co. 27
Agency—The Jay H. Maish Co.
Master Builders Co. 200
Agency—Bayless-Kerr
Maxon Construction Co. 179
Agency—York & York
McConville, Inc. 215
Mixermobile Distributors 119
Agency—Alport Associates
Mott Core Drilling 211
*Multiplex Machinery Corp. 186
Agency—A. Hemsing

National Conveyor & Supply Co. 166
Agency—Richard F. Johnson, Adv.
New York and New Jersey Lubricant Co. 140
Agency—The House of Hayden Twiss
Nopco Chemical Co. 125
Agency—Lewin, Williams & Saylor, Inc.
*Nordberg Manufacturing Co. 12, 141
Agency—Russell T. Gray, Inc.

O. K. Clutch & Machinery Co. 144
Agency—Olian-Sidman Adv.
Oliver Corp. 206
Agency—Bucken Co.
O'Neill, A. J. 215
Olsen Corp., Gene 190
Agency—Fred P. Bingham
Oswalt Engineering Service Corp. ... 188
Agency—Wamsley & Heer, Inc.
Owen Bucket Co. 132
Agency—T. H. Ball & Sons

Pennsylvania Drilling Co. 211
Agency—Edward M. Power Co.
*Pettibone Mulliken Corp. Construction Equipment Div. 4, 5
Agency—W. D. Lyon Co.
Prat Daniel Corp. 198
Agency—Hening & Co.
Preco, Inc. 127
Agency—The Shaw Co., Adv.
Pyott Foundry and Machine Co. 214
Agency—Raymond C. Hudson & Assoc.

Quinn Wire & Iron Works 196
Agency—Lessing Adv. Co., Inc.

*Raymond Pulverizer Div. of Combustion Engineering-Superheater, Inc. 60
Agency—Wamsley & Heer, Inc.
Reading, Inc., Eugene P. 218
Rehberger & Co., A. 175
Agency—United Adv. Agency
Republic Rubber Div. 203
Agency—Meek & Thomas, Inc.
Ripplemead Lime Co., Inc. 217
Rock Bit Sales & Service Co. 142
Agency—Norman P. Hewitt, Advertising
Roebling's Sons, John A. 6
Agency—Beatty & Oliver, Inc.
Rust-Oleum Corp. 19
Agency—O'Grady-Andersen-Gray, Inc.

Sauerman Brothers, Inc. 139
Agency—Symonds, Mackenzie & Co., Inc.
Schaffer Poidometer Co. 140
Schroeder Co., Inc., E. C. 216
*Screen Equipment Co. 224
Agency—Kelly Co., J. G.
Sheffield Steel Corp. 44
Agency—R. J. Potts-Calkins & Holden
Simplicity Engineering Co. 29
Agency—Price, Hedrick & Tanner, Inc.
Sinclair Refining Co. 52
Agency—Morey, Humm & Johnstone, Inc.
*Smidth & Co., F. L. 71
Agency—Stuart Co.
*Smith Co., T. L. 182
Agency—Paulson-Gerlach & Assoc.
Smith Engineering Works 10, 11
Agency—Cramer-Krasselt Co.
Smith, Inc., L. B. 213
Stanhope, Inc., R. C. 215, 219
Stearns Manufacturing Co., Inc. 149
Agency—Beeson-Reichert, Inc.
Steelton Slag Co. 212
Straub Manufacturing Co. 46
Agency—Walter Monroe Co.
Supremix, Inc. 190
Agency—Fred P. Bingham
Syntron Co. 133

Tennessee Coal, Iron & Railroad Co. 120, 121
Agency—Batten, Barton, Durstine & Osborn
Texas Company .... Outside Back Cover
Agency—Erwin Wasey & Co., Inc.
Timken Roller Bearing Co. Rock Bit Division 47
Agency—Batten, Barton, Durstine & Osborn
Torrington Company 9
Agency—Hazard Advertising Co.
Tracto-Lift Co. 195
Agency—Merritt Owens, Adv.
*Traylor Engrg. & Mfg. Co. 39, 45
Agency—Kamp & Godfrey, Inc.
Trenton Salvage Project 215

Union Bag & Paper Corp. 7
Agency—Smith, Hagel & Snyder, Inc.
Unit Crane & Shovel Corp. 180
Agency—Paulson-Gerlach & Assoc.
United States Rubber Co. 54
Agency—Fletcher D. Richards, Inc.
United States Steel Co. 120, 121
Agency—Batten, Barton, Durstine & Osborn
United States Steel Export Co. .. 120, 121
Agency—Batten, Barton, Durstine & Osborn
Universal Atlas Cement Corp. 150
Agency—Batten, Barton, Dunstine & Asborn
Universal Door Carrier, Inc. 194
Agency—Jack A. Hunter, Adv. & Osborn
Unverzagt & Son, G. A. 213

Wall Colmonoy Corp. 143
Agency—A. Hemsing Adv.
Wenzel Machinery Rental and Sales Co. 217
Wickwire Spencer Steel Div. of the Colorado Fuel & Iron Corp. 67
Agency—Doyle, Kitchen and McCormick, Inc.
*Williams Patent Crusher & Pulv. Co. 209
Agency—Herbert-Robinson Adv.
Williams, Roger F. 196
Willson Products, Inc. 145
Agency—Beaumont, Heller & Sperling, Inc.
Winslow Engineering Co. 20
Agency—West-Marquis, Inc.
Worthington Pump & Machinery Corp. 14
Agency—James Thomas Chirurg Co.

*Yuba Manufacturing Co. 134
Agency—Geo. C. McNatt, Adv.

★See also Detailed Information in 1951 Pit and Quarry HANDBOOK

Here is the ANSWER to your MAGNETIC SEPARATOR JOBS!

HOMER "POWER-PLUS" MAGNETIC SEPARATORS

PERMANENT non-electric—*Unaffected by HEAT, COLD or MOISTURE*

CAN BE USED INSIDE OR OUTSIDE PLANT

HOMER MAGNETIC PULLEYS AND PULLEY UNITS—
Available in standard diameters from 12" to 30"; belt widths 4" to 60". Special sizes upon order.

HOMER MAGNETIC DRUMS—
Available in standard diameters from 12" to 30"; face widths 4" to 60". Can be furnished with or without enclosure.

HOMER MAGNETIC PLATES—
Available in standard widths from 4" to 26"; lengths and number of poles as required. Special fabrications to your specifications.

HOMER PULLEY

Write for descriptive bulletins

THE HOMER MANUFACTURING CO. INC., DEPT. I-52, LIMA, OHIO

HOMER DRUM

SECO MEANS *Proved* SCREENING DEPENDABILITY

by the HOUR

by the MONTH

through the YEARS

After all . . . it's performance that counts . . . it's the day after day, year after year ability to stay on the job without constant maintenance that makes any vibrating screen worth its salt.

So when we talk about Seco performance . . . we're talking from your viewpoint. Hundreds of operators like you have found out from actual experience that Seco vibrating screens are built to endure . . . under all types of load requirements.

That's it in a nutshell! 94% of all Seco screens ever built are still in service . . . Many are in their 12th, 13th, 14th and 15th years of dependable service.

May we talk to you soon about a dependable Seco for your screening job?

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

SECO BUILDS OVER 300 "PERFORMANCE PROVEN" MODELS

Single, double, triple and three and one-half deck types. For screening everything from ag-lime to rip-rap.

Send for complete information and the name of your nearest Seco dealer.

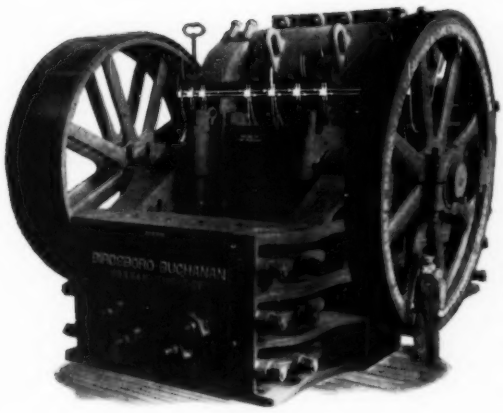
SCREEN EQUIPMENT CO., INC.

1750 Walden Avenue, Buffalo 25, New York

In Canada: United Steel Corp., Toronto, Ontario

World's largest deep frame jaw crusher is protected by Farval lubrication

FARVAL—*Studies in Centralized Lubrication* No. 133



KEYS TO ADEQUATE LUBRICATION—*Wherever you see the sign of Farval—the familiar valve manifolds and dual lubricant lines—you know equipment is properly lubricated. Thus you can see there will be no bearing trouble on this Birdsboro-Buchanan crusher.*

This giant weighs 275 tons, stands 18 feet high, has a 66- x 84-inch jaw opening. It handles feed from a 5-cu.-yd. shovel, discharging a 14-inch product at the rate of 800 t.p.h. It is one of more than fifty thousand industrial machines whose bearings are protected by Farval.

Photo above by courtesy Birdsboro Steel Foundry & Machine Co.

IN the next few months, this mammoth machine will crush three million tons of diorite. Largest deep frame jaw crusher ever built, it is operating on the Detroit dam project in western Oregon.

A highly publicized feature of this project is the cooling of all the aggregates used in the concrete construction. The builder of this crusher insured that the bearings in his equipment would always run cool, too. He equipped it with a Farval Centralized Lubrication System.

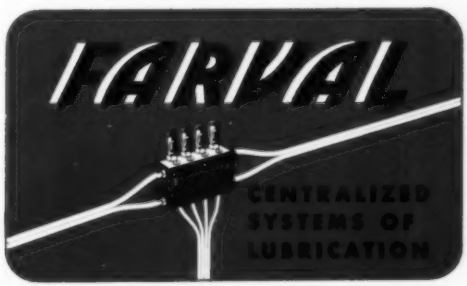
With Farval on the job, no special oilers are needed, lubricant consumption is reduced, bearing life is extended indefinitely and shutdowns for oiling or bearing replacement are eliminated. In short, Farval insures that the crusher can work day in, day out, without interruption from overheated bearings, in doing its part to see that the great Detroit dam is finished according to schedule.

Farval is the original Dualine system of centralized lubrication for industrial equipment, proved practical in 25 years of service. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Through its full hydraulic operation, the Farval system unfailingly delivers oil or grease to each bearing—as much as you want, exactly measured—as often as desired. Indicators at all bearings show that each valve has functioned.

In or near your city there's a Farval engineer, ready to discuss your lubrication problems and suggest a proper system to meet your particular needs.

The Farval Corporation, 3280 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



KEEPS EQUIPMENT ON THE JOB
KEEPS JOBS AHEAD OF SCHEDULE

that's why Brown Contracting Company prefers TEXACO MARFAK

SIMPLIFIED LUBRICATION

Follow the Texaco Simplified Lubrication Plan and you can handle *all* your major lubrication *with only six Texaco lubricants*. A Texaco Lubrication Engineer will gladly explain its many advantages. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

For the past ten years, Brown Contracting Company, Albuquerque, N. M., has made *Texaco Marfak* its first choice for chassis lubrication. Reasons: "*Texaco Marfak* stays in the bearings, gives longer lasting protection against wear and rust even under the toughest conditions, and definitely increases parts life. We have less down-time on our equipment, and our maintenance costs are lower."

For the same reasons, contractors everywhere prefer *Texaco Marfak*. That's why: MORE THAN 400 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD.

For wheel bearing lubrication, use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture, seals itself in. Assures safer braking because it won't leak onto drums. You can count on longer bearing life, lower maintenance costs. No seasonal change required.

Reduce Other Maintenance Costs

In engines — heavy-duty gasoline or Diesel — use *Texaco Ursa Oil X***. It's fully detergent and dispersive, keeps engines clean for low maintenance costs and fuel consumption.

In crawler track mechanisms, use *Texaco Track Roll Lubricant*. It seals out dirt and moisture, protects bearings against wear and rust.

TEXACO Lubricants and Fuels

Faithfully yours 50 *for Fifty Years*

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.